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(1) The *pre-conceptional period*, in which the seed to be sown and the soil in which it is to germinate are the elements concerned; (2) the *intrauterine period*, in which development is carried from the blastomere stage up to the birth of the fully developed infant; (3) the *postnatal stage*.

With the preconceptional period we are not now concerned; in this field the eugenists would like to experiment, selecting and allotting candidates for marriage mainly from the point of view of their suitability for breeding, and scarcely at all from the point of view of individual preferences, tastes, or disposition. To this field belong such interesting questions as the varying degrees of fertility of different races, the causes which underlie the dying-out of some families, and the rapid multiplication of others. Nor need we enter the domain of the pædiatrician and discuss the questions associated with infant mortality and morbidity. It is Pinard's second period which concerns us—viz., that in which the child is developing in the uterus; this period is under the care of the obstetric department of medical practice. It is therefore part of our duty to consider whether there is anything we can do, and if so what, to ensure that the intrauterine child is given the best chance of completing its development, and entering upon its separate existence under the most favourable possible conditions. Strictly speaking, this period of the child's existence includes the birth process as well, and we cannot entirely overlook, in our review of the subject, the risks to which the child is subjected in the birth-process, although it will not be necessary to enter into much detail in that particular.

The subject obviously forms a branch of what is known now as antenatal work: usually this work is looked upon as being concerned with the expectant mother, and as such it is now understood and welcomed by the public. Antenatal work should not be regarded only as a maternal safeguard, although its primary object is to ensure that the expectant mother gets through her pregnancy with the minimum of risk, and that she enters upon her labour under the most favourable obstetrical conditions. The steady, although slight, diminution which has occurred in the total maternal mortality of childbearing—i.e., the mortality from all causes—during the last 20 years, and is still continuing, is due at any rate in part to widespread establishment of antenatal clinics, and to the enthusiastic band of medical and lay assistants who work these clinics. I think I can show, however, that the fœtal and infantile mortality of pregnancy and labour is appallingly high, and unless we regard this aspect of childbearing on its merits, and as distinct from, although supplementary to, the maternal risks, we shall fail to realise its great importance.

ANTENATAL CARE AS AFFECTING THE CHILD IN UTERO.

The question I am asking you to consider then is to what extent can antenatal care of the mother influence the well-being of the child in utero? Can we in any degree safeguard it against the risks of intrauterine death? or against premature expulsion either when non-viable, or later on when viable but heavily handicapped by prematurity? or from grave defects of development? or from transmitted intrauterine disease? or from the perils of the birth process? We have, perhaps, in the past been too much inclined to wash our hands of all responsibility for the child until it is born. We have considered its fate as lying in the hands of the two great forces which control development—viz., heredity and environment—forces which may well at first sight appear to be beyond our control. Heredity we must not stop to consider; environment, on the other hand, we should certainly consider carefully, making use of the term in its broadest possible signification.

The child in utero leads an extraordinarily sheltered existence, and can only be affected through the mother. Generally speaking, the relation of the fœtus to the mother is that of a parasite to its host, although Ballantyne, who did so much to arouse interest in the unborn child, inclined to the view that the relationship was a *symbiosis*—i.e., a kind of compromise in which parasite and host become of service to each other. The mechanism by which the embryo is formed, and the various stages of its organogenesis are completed, is an intrinsic embryonic mechanism. The embryo needs only food and shelter; given these necessaries it works out its own development. Should the supply of nutriment to the embryo be deficient in quantity or quality, or should it fall under the influence of poisonous substances which reach it from the mother's blood, or should its resting place be subject to injury from without, the environment will be so modified as to deflect the normal course of development and perhaps to render the continued existence of the embryo impossible. The number of infectious diseases which can be transmitted to the fœtus through the placenta is a very large one, and no useful purpose would be served by my detailing them to you. In some other conditions, such as the pregnancy toxæmias and chronic renal disease, the placenta may be damaged to such an extent as to cause the death of the fœtus. We know little or nothing of the effect which minor departures of maternal health produce upon the placental exchanges.

It is, perhaps, not unreasonable to suppose that not only what the pregnant woman eats and drinks, and the air she breathes, but also her occupations and even her emotions, may exert an influence upon the child in her womb. We know that the state of the circulation may be profoundly influenced through the nervous system, and the character of the glandular secretions may be modified by psychical influences. I have not time to mention instances of these changes, but given their occurrence in a pregnant woman it is not unreasonable to suppose that the placental interchanges may be modified by them. It may be a long time before we are able to estimate the degree of importance which should be attached to considerations such as these which are in the meantime merely speculative, but we shall, as we proceed, find reason to admit that the placental interchanges

probably cover much that cannot properly be included in the functions of nutrition and respiration.

Next to the welfare of the mother our great concern in antenatal work is that the child should complete its proper period of intrauterine development and be born not only alive, but with the best possible chance of survival. Let us first of all consider what are the present chances of the child completing its intrauterine development and being born alive. It may be cut off either by miscarriage or by stillbirth; and further, if born alive, it may be born in a condition which renders its survival impossible, or at the best a matter of great uncertainty.

As regards the frequency of miscarriages there are, of course, no official figures in this or any other country. Some years ago my colleague, Dr. Amand Routh,[1a] attempted to estimate the frequency of miscarriages, partly from the experience of several clinical observers, and partly from returns obtained from certain cities in the U.S.A. His figures indicated that almost one in five of all pregnancies terminated in miscarriage. If this figure is to be accepted for our own country it would follow that in England and Wales in the year 1924 something like 190,000 pregnancies terminated in miscarriage. I do not suggest that we should accept this figure without reservation, but there can be no doubt that miscarriage is a very frequent occurrence.

Regarding stillbirth there is information available in this country but it is limited. We know the number of stillbirths notified under the Notification of Births Act, but no information as to the cause of death is given for stillbirths at all. Another source is the returns which are published by some but not by all of our lying-in hospitals. According to the report for 1924 of the chief medical officer to the Ministry of Health, over 25,000 stillbirths were notified in that year. This corresponds to a rate of 3·3 per cent. of live births. The total maternal mortality of child-bearing for the same year was 3·7 per 1000 live births, so that the stillbirth-rate alone, and taking no account of miscarriages, was roughly ten times greater than the total maternal mortality.

In France in the year 1922, according to Couvelaire,[2] the proportion of registered stillbirths (and only those are included which had passed the sixth month) amounted to 44 per 1000 live births. The same author shows that in France it is in the great centres of population that the highest stillbirth-rate is found; Paris had a rate in that year of 93 per 1000; a group of large towns a rate of 69 per 1000; rural departments only 26 per 1000. Fœtal death is, however, not the only consideration to be borne in mind. Many infants born alive die in the very early days of the neonatal period from injury received in labour, from prematurity, from disease, or from debility of unknown origin. It is clear, therefore, that if we are properly to envisage the problem of prevention we must endeavour to bring into view all the conditions which are capable of influencing the well-being of the child during its intrauterine development.

Ballantyne [3] divided the duration of intrauterine life into three periods, and it will be a help to us to make use of his classification. The three periods were: first, the *embryonic period*, which extends from the act of fertilisation to the end of the eighth week; second, the *fœtal period*, from the end of the eighth week to the onset of labour; third, the *intranatal period*, comprising the birth process itself.

1. THE EMBRYONIC PERIOD.

The embryonic period is that in which are laid down the sex of the offspring, its inheritance of hereditary characters, and the general plan of all the organs of the body. Ballantyne also speaks of it as the organo-genetic period. Sex and inheritance are decided, according to modern views of development, at the moment of the first segmentation of the fertilised ovum. Malformations of all kinds are initiated in the embryonic period. The mechanism by which the sex of the individual is determined and also its inheritance of hereditary characters, in view of recent biological advances is now clearer than it has ever been before; it even appears to be not impossible that experimental means may be found of altering the sex ratio, that is, the proportion of males to females, in the case of some creatures such as insects. It is therefore not out of the question that not we ourselves, but those who may follow us, will discover some practical method of influencing the segmentation of the ovum in the direction of maleness, or femaleness, at will. It will consequently be well for us to keep in mind as clear a conception as we can of the biological hypotheses of to-day relating to the determination of sex and of heredity.

Sex Determination.

Modern biological research first placed the difficult subject upon a firm foundation in the case of insects and certain genera of birds, and there is little doubt that in principle these results are applicable to the higher animals.

Sex is determined at the moment of fertilisation—i.e., when the male and female gametes unite, and the arrangements are such as to produce an approximately equal number of individuals of either sex. When the gamete or sex cell divides its nucleus breaks up into a series of dense, deeply-staining bodies known as chromosomes; each species of creature has its own special number and arrangement of chromosomes which are constant for that species. After division of the gamete each daughter cell contains the same number and arrangement of chromosomes as the parent cell. Before the male and female cells fuse in the act of fertilisation, certain preparatory changes take place in the chromosomes. They become arranged in pairs, and as a result of cell-division the two members of each pair separate from one another so that each resulting nucleus contains only half the original number of chromosomes. This is called the *reduction-division* and it is accomplished in the human egg-cell by the extrusion of the polar bodies. In the chromosomes are carried the elements which determine sex and also those which determine hereditary characteristics. The reduction division is the mechanism by which variations in inherited characteristics are produced, the elements extruded at this moment representing the hereditary traits which will be absent in the new individual.

It is obvious that this mechanism gives possibilities of an almost endless variety of combinations of hereditary characteristics, and is comparable to the shuffling of a pack of cards. It offers an easy explanation of the differences both physical and temperamental which are so commonly observed in children of the same parents. Indeed, with the exception of "identical twins"—i.e., uniovular twins of the same sex and identical physical characteristics, these variations are almost universal. The close similarity of uniovular twins of the same sex strongly supports the view that this form of twin results from the fertilisation of a single egg-cell.

It is known that in certain insects the number of chromosomes differs in the two sexes, the female having one more than the male; a similar difference between the two sexes exists in the case of many other creatures. The sex-chromosomes are called X-chromosomes and in the simplest form the female has two similar chromosomes XX; in the male there are two dissimilar sex-chromosomes—viz., XY, the female always has XX. After the reduction-division has occurred the female gamete will, in consequence, always contain an X chromosome; in the case of the male gamete one-half will contain an X, another will contain a Y chromosome. If an X female fuses with an X male the result will be XX—i.e., female; or if X female fuses with Y male the result will be XY—i.e., male.

Certain experimental work which has been done in the case of insects and birds, however, appears to indicate that the proportion of individuals of either sex may be altered to some extent by external

influences. Leiter found in experimenting with the eggs of certain moths that by exposing them to a temperature of 35–37° C. (about 90° F.) the proportion of male individuals was markedly increased, while conversely a similar exposure to a low temperature markedly decreased this proportion. In the case of pigeons experimental work has so far advanced that in the words of Julian Huxley,[4] "there exists a very strong probability that we shall be able to find some agency which will alter the sex-ratio to suit our wishes."

He would be a bold man who would affirm that these results are incapable of extension to the case of the higher animals such as the mammalia. At the present moment we are not justified in assuming that they can be so applied, for it is obvious that in animals which carry their young in the womb, the fœtal environment could be modified, if at all, only with the greatest difficulty in the direction of altering its temperature. Of course, rises of body temperature are not uncommon, but when fever occurs in pregnant women the ovum is subjected not merely to the raised temperature of the body but also to the toxic bodies which result from fever or those to which the fever is due. The experiment of subjecting the mammalian ovum during segmentation to an elevated temperature uncomplicated by other changes seems almost impossible of attainment.

The idea that it was possible by extraneous measures to determine the sex of the unborn child has been tenaciously held since the beginning of history. Gifts to pagan deities and pilgrimages to shrines of saints represent the appeal to the supernatural which human nature is prone to make on all critical occasions. These are, however, not, strictly speaking, therapeutic measures and do not concern us now. The belief still persists among the laity that matters can be so arranged by husband and wife as to produce a child of the desired sex, but this belief has no basis in accredited facts.

Malformations.

Let us in the next place consider the causation of malformations. We have seen that the embryonic period is the time at which those deflections from the normal course of development occur which result in the production of malformations of all kinds. There was no clear idea possible of the causation of these defects until it was shown by experiment that they could be produced by subjecting the developing embryo to various kinds of abnormal stimuli; from small beginnings an extensive field of experimental teratology has now been covered, and it appears that there is no known malformation which cannot be experimentally reproduced, in the case of certain classes of animals. It is, of course, admitted that the particular stimuli which have been made use of experimentally could not well be applied to the mammalian embryo. They are all sufficiently powerful to produce actual injury, and their effects may fairly be classed as traumatic. These experiments lead us to believe that the cause of malformations in man must be sought in some alteration of environment which would be comparable to the physical or mechanical stimuli used in these experiments.

It would serve no practical purpose to enter at all fully into it, but one or two examples may be cited of the results of injury of the segmenting ovum. The expression "injury" must be understood to include all abnormal stimuli, mechanical, thermal, chemical, and electrical.

Some of the earliest experiments were made with the incubation of hen's eggs, when it was found that variation in the temperature of the hatching medium in either direction resulted in the production of a large percentage of deformed chicks. By shaking the eggs, or standing them up on end St. Hilaire produced double-monster chicks. Other observers worked with chemical stimuli, and it was found that the injection of alcohol into the blastomere of the incubating egg produced a large percentage of deformed chicks. The more toxic forms of alcohol, such as isopropyl alcohol, might result in the appearance of over 80 per cent. of such deformities (Féré).[5]

More recently experiments have been made with the ova of sea-urchins and similar forms. It has been discovered that by violently shaking the fertilised ova in a centrifuge, the component cells become separated from one another, and each separate cell may then develop a complete individual of proportionately smaller size than the normal. These latter experiments support the view that triplet, quadruplet, or quintuplet pregnancy may possibly be accounted for, not by simultaneous fertilisation of more than one ovum, but by traumatic separation of the cells of the blastomere at a very early stage of its formation. With ascidian ova it has been shown that if, in the two-cell stage, one cell is destroyed by heat the other develops into a half-embryo. Similarly, if in the four-cell stage the two posterior cells are destroyed the remaining ones develop into an embryo minus a tail and other hinder parts. Another observer found that in the frog also a hemi-embryo could be produced in much the same manner as in the ascidian, but his results lack confirmation (Rowe). Further, if the frog's egg be turned upside down in the two-celled stage, double-bodied or double-headed embryos may result. Siamese twins and two-headed forms in man probably result from partial separation of the cleavage cells. In vertebrate animals spina bifida has been produced by changes in temperature, and in other cases cyclops has been produced.

We must not conclude that traumatism is the invariable cause of malformations, because F. W. Browne[6] has shown that there is good reason to believe that the anencephalic fœtus is the result of non-development of the pituitary body. And further, remarkable effects may be produced by alterations of nutrition. At any rate, it is clear from what has been said that deformities should not be regarded as mere freaks of the developmental forces, or as the result of hereditary vicious tendencies. The future may possibly teach us the nature of the terato-genetic traumata which operate in man and how to avoid them. At the moment we have no gleam of light on the subject.

Causes of Embryonic Death.

Of the actual causes of death in the embryonic period we know little, and there is no reliable basis on which an estimate can be formed of the frequency of embryonic death. It is probable that a considerable number of miscarriages occur which are not the result of disease, but are either produced by slight traumatic causes or are due to a certain unfitness of the early embryo to complete its development. In all creatures the reproductive process is attended by a certain amount of wastage.

It is not the rule of nature that all the ova which ripen and are discharged from the ovary should become fertilised, nor that all those which do become fertilised should complete their development into new individuals. The character and cause of this normal wastage have been carefully examined by Arthur Robinson[6a] in the case of horses and ferrets, the former being either Clydesdales or thoroughbreds, about which accurate details as to mating and foaling could be obtained. Robinson showed that in ferrets a considerable proportion of the zygotes or fertilised ova perished at various stages of development, although in the same uterine cornu neighbouring zygotes on either side of them developed normally. He regarded their death as being due to structural unfitness of the zygote to fulfil its destiny, and not to any abnormal maternal condition. In this conclusion he was no doubt right. The occurrence of fœtal death in the case of mares is not clearly proved by Robinson's data, and it would appear that his conclusions are mainly to be read as applicable to animals which produce their young in litters, and in whom, consequently, a high fœtal death-rate would not be prejudicial to the continuance of the species.

In animals which produce only one, or at the most two, young at birth, like mares, a high fœtal death-rate would be of graver significance. It may be admitted, however, that in man it is, at any rate, probable that a certain unknown proportion of the abortions which occur, and for which no pathological explanation can be found, may be set down to the reproductive wastage described by Robinson.

2. THE FŒTAL PERIOD.

Before proceeding to consider the conditions which are mainly accountable for loss of fœtal life, it will be well to review one or two matters which are concerned with what may be called the general hygiene of the fœtus in utero. Let us look at the case of the child of healthy parents, suffering from no disease which can be transmitted to it such as the infections, or which can prove inimical to its continued existence such as toxic albuminuria and eclampsia. Besides providing it with food and shelter, does a healthy mother influence the condition of the child in utero by her own physical health, or by her occupation, or by the struggle for existence?

Transmission of Immunity.

On the threshold of this question lies the subject of the transmission of immunity. Is the new-born child in any way prepared, by the transplacental passage of immunity bodies from the mother, to resist infection acquired after birth? Clinicians have frequently drawn attention to the great susceptibility of young infants to infections of all kinds, and the view has been often expressed that the child does not acquire a power of actively resisting infection until the second year has been passed. Passive immunity may, however, to some extent be acquired from the mother—i.e., antibodies present in the mother serve to confer a certain measure of protection upon the child while its own powers of resistance are undeveloped. It will, perhaps, be of interest to summarise as well as I am able the present state of our knowledge on this subject.

For a long time it was thought that such antibodies as the young infant possesses reach it through the mammary secretion, and that mainly through the special secretion of the first two to three days, known as the colostrum. This view was the outcome of experimental work done on ruminant animals such as the cow, the goat, sheep, and also on pigs and horses. In these animals antibodies do not reach the fœtus in utero at all, but they are present in large amount in the breast milk, and can be found in the blood of the young after suckling. Two American observers, Kuttner and Ratner,[7] have recently shown that these results do not hold good for all mammalia, and that in certain rodents antibodies can be detected in the umbilical blood at birth. Similarly, these observers have shown that antibodies can also be found at birth in the blood of the new-born human infant. This difference between ruminants and rodents is attributed by these investigators to a difference in placentation; in the former the placenta consists of a double layer of epithelium, while in rodents and in man the placental epithelium consists of only a single layer, and is therefore more readily permeable.

The experimental work has been done mostly with the antitoxin of diphtheria, because in the cutaneous reaction known as the Schick test we have a very convenient means of checking the individual power of resistance to the diphtheria toxin. I may remind you that the Schick test consists in the intradermal injection of a specific dose of a graduated solution of diphtheria toxin; if this dose is inadequately "resisted" by the tissues a local reaction occurs in 24–36 hours; if the resistance is adequate there is no local reaction. A positive result is therefore an indication that the individual is inadequately protected.

Kuttner and Ratner found in a series of 30 observations that whenever the mother gave a Schick negative test, the diphtheria antitoxin could be detected in the blood of the umbilical cord as well as in that of the mother. In a further series of 15 cases in which quantitative tests were applied, they found that the amount of antitoxin in the umbilical blood was identical with that in the mother's blood. This observation has been amply confirmed by other investigators. There is, therefore, in these animals (rodents) no loss of antitoxin in passage through the placenta, which clearly allows these bodies to pass through freely. These immunity bodies transmitted from the mother's blood during pregnancy would confer immunity on the child, in the same degree as it exists in the mother.

The observation was first made in 1895, and has since been established beyond question by numerous observers, that the new-born child is protected against diphtheria. According to Zinsser,[8] 93 per cent. of new-born infants give a negative Schick reaction provided that the mothers are negative also. This protection diminishes during the first year, so that at the beginning of the second year two out of every three infants have no antitoxin in their serum. The immunity of the new-born infant is brought about by the transplacental distribution of the antitoxin present in the mother's blood, and, as we have just seen, the amount of antitoxin is the same in both the mother's and the child's blood.

These American authors further made a comparison between the protective value of the umbilical blood and that of the colostrum in guinea-pigs. In 9 cases out of 12 the cord-blood gave complete protection against a lethal dose of diphtheria toxin, while colostrum gave complete protection in only 1 out of 12; further, they found that the antigen content of the blood of the young was not raised after suckling had begun. It is, therefore, clear that in these creatures immunity bodies pass to the fœtus mainly through the placenta, and only to an inconsiderable extent is this amount supplemented from the mammary secretions. In the case of calves, on the other hand, it appears that the colostrum is the chief vehicle by which immunity bodies pass to the young; this fact is confirmed by a striking clinical observation that while calves deprived of suckling regularly fall a prey to the disease known as "scours," a form of *Bacillus coli* infection characterised by diarrhœa, those which are suckled are completely protected from the disease. Owing to the fact that the rodents and man have a similar form of placentation—i.e., a single-layered epithelial filter, it is probable that results obtained with these animals are more likely to throw light upon what occurs in man than are experiments with ruminant animals.

One further observation I should like to mention in relation to immunity. Kleinoff[9] claims to have shown that the umbilical blood of the new-born child possesses definite hæmolytic or bacteriolytic powers. He found that if the serum of the infant's blood were added to cultures of certain bacteria the growth of these organisms was inhibited, and in some cases the bacteria were broken up. The effect is the same, although less in degree than that obtained with the blood-serum of an adult. It is clear, therefore, that the fœtus acquires certain passive immunities in utero through the placental interchanges. What may be the actual extent of this process of passive immunisation of the child we cannot tell in the meantime. A very wide field is opened up by these suggestive experiments, and although at present the number of infections in respect of which it is possible to confer passive immunity is not large, it must be remembered that the science of immunology is in its infancy, and great developments may be witnessed in the future.

Effect of General Maternal Conditions.

Next we must consider to what extent the well-being of the fœtus in utero can be influenced by general maternal conditions such as nutrition, occupation, hardship, and what we may perhaps term "nervous stress." The tendency within the profession has been to consider that the child in utero, like all parasitic organisms, would succeed in looking after

itself no matter how much the mother might suffer from such conditions as hardship or under-feeding. It is doubtful if this view can be maintained absolutely, and there are certain facts and considerations bearing upon the point to which I should like to draw your attention. It will be convenient if in the first place we consider conditions which may conceivably be detrimental to the fœtus in utero without actually terminating in miscarriage or stillbirth.

If an inquiry is made as to what extent the occupation and environment of the expectant mother may affect the well-being of the child at birth, a serious difficulty is at once encountered—viz., that it is very difficult to find any reliable criteria of well-being in the new-born except that of weight and length. It does not necessarily follow that the heaviest infants are the most vigorous at birth, or that they make better progress than the others. There are, undoubtedly, exceptions, but, as a rule, babies under the average weight at birth are less vigorous than those of normal or more than normal weight. It does not necessarily follow that every few grammes added to the weight of the child add in corresponding degree to its vigour and to its chances of survival. It is, however, an arguable proposition that such is the case, and certain investigations have been made upon this assumption which are worthy of our consideration.

Effect of Maternal Occupation on the Child.

Adolphe Pinard [1] was for many years an advocate of the view that women engaged in industry who continued at their work during the last three months of pregnancy showed a marked tendency to premature confinement; their infants were accordingly under-sized and less vigorous than full-time children. He carried out an inquiry as to the weight of the child at birth in different classes of women, with a view to testing the effects on the child of the mother's occupation, and particularly as to the value of cessation of work and admission to the clinique well in advance of the confinement. Investigations on similar lines were made about the same time by Letourner.

The results of Pinard's examination of 4445 cases were as follows:—

	Average weight at birth.
1. Women industrially occupied up to time of confinement and working in standing position	2787 g.
2. Women industrially occupied working in sitting position	3138 g.
3. Women who ceased their work from one to three months before confinement	3362 g.

This difference between the women who were engaged in hard industrial work up to confinement, and those who had ceased work for at least a month, is represented by an average increase in the weight of the infants of the latter of 575 g. The increase in the children of the women who rested is attributed by Pinard solely to the fact that these women carried their infants to term, while an undue proportion of the others did not.

Letourner's results were very similar. He divided the subjects of his inquiry into three classes as follows:—

	Average weight.
1. Women who worked up to confinement	3010 g.
2. Women who ceased work for at least ten days ..	3290 g.
3. Women who were admitted to the clinique before labour	3366 g.

An independent inquiry was being carried on about the same time in Germany and the results were reported by Fuchs in 1899.[10] His work was done on somewhat different lines and is perhaps more convincing than that of Pinard. He rightly thought that in investigating the effects of maternal occupation on the weight of the child the comparison should be made strictly between infants of an equal degree of development, and he accordingly excluded all premature infants from his inquiry. Incidentally, it may be said that he disagreed with Pinard's conclusion that continuance in industrial work tended to result in premature labour.

Fuchs classified his cases into occupational groups:—

	Average weight at term.
1. Domestic service and allied occupations—	
(*a*) No hospital treatment	3285·33 g.
(*b*) Hospital treatment	3437·16 g. (+ 152)
2. Dairy and other agricultural work—	
(*a*) No hospital treatment	3324·95 g.
(*b*) Hospital treatment	3354·50 g. (+ 30)
3. Factory workers—	
(*a*) No hospital treatment	2948·35 g.
(*b*) Hospital treatment	3123·75 g. (+ 175)
4. Light work only—	
(*a*) No hospital treatment	3196·42 g.
(*b*) Hospital treatment	3305·76 g. (+ 109)
5. Married women, housekeepers, &c.—	
(*a*) No hospital treatment	3378·45 g.
(*b*) Hospital treatment	3416·15 g. (+ 136)

The main conclusions which appear from Fuchs's observations are (1) that the infants of factory workers are smaller than those of the other classes, (2) that the infants of all classes of patients benefit by a hospital régime during the latter weeks of pregnancy, (3) that especially women who work in factories, and to a less extent town workers generally, benefit more from the hospital régime than do women engaged in outdoor agricultural occupations. These conclusions serve to emphasise the generally accredited view that country women engaged in farm work, who are necessarily of good physique, who are engaged in outdoor occupation, and are well-fed, are the most likely to produce vigorous and well-developed infants. The problem of the weakly infants whose chances of survival are below the average is essentially an urban problem.

Effect of Maternal Privation and Hardship.

Closely linked to the question of fatiguing occupation is the question to what extent privation and hardship endured by the mother during pregnancy can influence the well-being of the child in utero. The experience of the Central European countries during and immediately after the war has shown us the result of an experiment on a scale far exceeding that which would be possible under any ordinary circumstances. The reports from Germany and Austria were almost unanimous that no appreciable diminution could be detected in the average weight or length of infants born during these years of privation. One authority, Prof. Klotz,[11] of Lübeck, has, however, noted a point which is worthy of consideration. In the years 1919 and 1920, which were perhaps even more difficult for the lower classes in Germany than the actual war period, Klotz found that if a comparison were made between the legitimate and illegitimate infants it was found that while the former showed no difference in weight between pre-war years and these two post-war years, it was not so with the illegitimate infants, and he gives the following figures:—

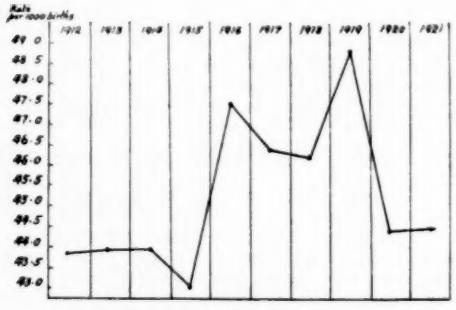
Average Birth Weights Before and After the War (Klotz.)

	Legitimate.	Illegitimate.
1913	3742 g.	3671 g.
1914	3819 g.	3821 g.
1919	3789 g.	3424 g.
1920	3810 g.	3559 g.

It is to be borne in mind that for a long time before the war the proportion of illegitimate births in Germany was unusually high—viz., between 9 and 10 per cent. of the total births. This already high proportion increased during the war period because the number of legitimate births became reduced at a much greater rate than the illegitimate ones. The stress of hardship and want will naturally fall more heavily on the illegitimate mothers than on others, and it is not unreasonable to suppose from these data that there is a limit beyond which such

conditions as privation and hardship would become definitely detrimental to the child in utero (see chart).

While we are speaking of the effects of war conditions, I should like to call attention to a further point—viz., their influence upon the occurrence of stillbirths. The accompanying chart shows the changes which occurred in the stillbirth-rate in France during the period covered by the war and the two following years. The figures are worked out in their ratio to the total births, and it will be seen that a marked rise in the stillbirth-rate occurred during the years 1916–19.



The figure for 1914 is a provisional one.

The corresponding figures for our own country are not available. War conditions included so many different varieties of privation and nervous stress that it is impossible to attempt any explanation of their modus operandi. We must simply record the fact that there is a point beyond which such conditions are unfavourable to the proper development of the fœtus in utero.

There is one more study of the effects of maternal nutrition on the new-born child to which I should like to refer—viz., that published by Darwall Smith [12] in 1916. He closely examined the records of over 6000 hospital cases in London and Dublin with regard to the ratio of height to weight, the nutritional history, and the observed nutritional condition of the mother on admission and on discharge from the hospital. He divided his cases into three groups—those in which the nutritional condition of the mother were (*a*) bad, (*b*) average, and (*c*) good—and his conclusions as regards the influence of these conditions (1) on fœtal mortality, (2) on prematurity, (3) on the birth weight are of great interest.

	Condition.		
	Good.	Average.	Bad.
Fœtal mortality	1·9%	1·1%	7·7%
Prematurity	1·3%	2·7%	11·9%

As regards the birth weight, Darwall Smith found that there was little difference between the classes of bad and average nutrition, but the infants in the class of good—i.e., over-average—conditions were decidedly above the average weight.

These observations suggest that a bad nutritional condition of the mother greatly increases the percentage of stillbirths and of premature labours, and slightly decreases the birth weight. The mothers who were over-nourished showed a considerable average increase in birth weight, and a higher percentage of them were able to suckle their babies.

Effect of Maternal Diet.

A question related to that which we have just considered, but in reality distinct from it, is whether specific deficiencies in the mother's diet can influence the development of the fœtus. It is obvious that this may be so, although general insufficiency of food may be without effect. In its clinical aspect this question has hardly been explored at all, so far as I am able to find, but there is a certain amount of experimental work which I think deserves notice. In 1921 Reynolds, of Boston, well known in the United States for his interest in the subject of sterility, published in conjunction with Macomber a series of observations on the manner in which the fertility of rats could be influenced by feeding them on specifically deficient diets.[13] In his experiments he took a certain strain of albino rats which had been inbred for 34 generations, and whose fertility-rate was well determined. The rate was somewhat lower than that of rats of a heterogenetic strain.

For the purpose of his experiments the rats were fed upon four different kinds of deficiency diet; the deficient elements were not absent from the diet, but were present in quantity somewhat less than the standard quantities of the stock diet, with which they were compared. The four varieties were:—

1. Low in fat-soluble vitamin.
2. Low in protein.
3. Low in calcium.
4. Double deficiency — i.e., low in protein and fat-soluble vitamins, high in carbohydrates.

The test consisted of determining the number of matings which proved fertile, and resulted in litters, under each form of diet, and the results were as follows:—

	Per cent.		Per cent.
On stock diet	65	On diet No. 2	31
On diet No. 1	55	On diet No. 3	14

In addition to diminishing the number of fertile matings it was found that the progeny of these animals did not begin to breed until a more advanced age than the stock rats, and the total period of their sexual activity was reduced. By continuing the deficiency diet through several generations complete infertility could be produced. These infertile rats were apparently well-developed animals with the exception of those bred under a double-deficiency diet which were feeble and undersized.

The authors made a further very interesting observation—viz., that abortion with a macerated fœtus occurred in eight instances out of a comparatively small number of rats on a double-deficiency diet. After an extensive search through the literature of rat-breeding they had failed to discover an instance of this occurrence under other conditions. The authors further state that Steinbock has also reported the birth of macerated fœtuses in cattle and swine fed on similar deficiency diets.

It cannot be questioned that these observations of Reynolds and Macomber are very suggestive. It is difficult to make tests of sufficient numbers of cases in clinical work, but occasional opportunities may arise of seeking the explanation of failure to conceive, or after conception, of failure to carry the child to term, in deficiency of some important dietetic element. We have all seen those rare but puzzling cases in which a woman has on several occasions carried her child almost to term, and then for some quite obscure reason the fœtus has died in utero before labour has set in. Such cases, of course, are generally syphilitic, but failing this explanation, it would be worth while to explore the possibility of a dietetic deficiency being the operative cause. Occasional instances of what used to be called "habitual abortion" may also possibly arise from some dietetic fault.

The calcium content of the diet of an expectant mother is especially deserving of consideration. Blair Bell has estimated that the mother parts with 800 g. of calcium during the nine months of pregnancy; unless the element is freely renewed in the diet, it is quite possible that the fœtus may be calcium-starved with disastrous effects to its vitality. Milk and green vegetables are the principal dietetic sources of calcium, and this element can, of course, be readily supplemented medicinally.

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Clinical Lecture
ON
TRIPLE PUNCTURE:
LUMBAR, CISTERNAL, AND VENTRICULAR.

Delivered at Westminster Hospital

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WITHDRAWAL of the cerebro-spinal fluid is a familiar clinical procedure which has now been practised regularly for over 20 years. It is recognised as being of the highest value, sometimes for purposes of diagnosis, in other cases for treatment. A large and increasing literature has grown up with regard to this fluid, its pressure, its cellular content, its chemical composition, and its various pathological reactions, such as the Wassermann reaction, the colloidal gold and colloidal benzoin tests, and so on. These reactions I do not propose to discuss, but shall confine myself to a consideration of the various ways in which the cerebro-spinal fluid can be withdrawn for purposes of examination.

ANATOMY.

Let us first recall a few anatomical points. It is now well recognised that the cerebro-spinal fluid circulates slowly through an endothelial-lined system of its own. It is secreted by the capillaries of the choroid plexuses into the cerebral ventricles, much in the same way as the watery constituent of the urine is secreted by the renal capillaries into the glomeruli of the kidney. Starting at the lateral ventricles, the cerebro-spinal fluid flows slowly downwards along the Y-shaped foramen of Monro into the third ventricle. Here it receives accretions of fluid from the small plexuses within this ventricle; it also receives, through the infundibulum, the secretion of the posterior lobe of the pituitary gland. Then, passing along the aqueduct of Sylvius, or iter, the fluid reaches the fourth ventricle, again receiving accretions from the choroid plexuses of the fourth ventricle. From the fourth ventricle it passes back into the *cisterna magna* or *spino-cerebellaris* through three openings in the pia-arachnoid. One of these openings, the foramen of Magendie, is situated mesially in the roof of the fourth ventricle; the others are the bilateral foramina of Luschka, situated in each lateral recess of the ventricle. The direction of the stream now changes. It turns forwards, coursing from the cisterna magna along the ventral aspect of the medulla, pons, and mid-brain, to the wide and deep *cisterna basilaris*, *pontis*, or *interpeduncularis*, a quadrilateral space extending laterally from one temporal lobe to the other and postero-anteriorly from the upper border of the pons to the optic chiasma. At the chiasma the stream turns upwards again to enter another cistern, the *cisterna terminalis*, a triangular space whose base is at the optic chiasma whilst its apex is directed upwards beneath the anterior end of the corpus callosum, surrounding the anterior cerebral arteries. The basilar cistern comprises three parallel longitudinal channels, one in the middle line, surrounding the basilar artery, and one on each side, enclosing the internal carotid artery. From each side again a lateral continuation passes outwards and upwards, constituting the *cisterna fossæ Sylvii*, leading along the course of the middle cerebral artery. Finally, there is a *cisterna venæ magnæ*, situated between the hinder end of the corpus callosum and the upper surface of the middle lobe of the cerebellum, containing the posterior cerebral arteries and the vein of Galen.

Passing from the cisterns along these various peri-arterial arachnoidal channels into the cerebral fissures, the cerebro-spinal fluid is ultimately distributed to the meshes of the subarachnoid space in the sulci of the cerebral cortex and to the arachnoidal villi and Pacchionan bodies. In these situations it is reabsorbed into the blood circulation through the venous sinuses in the dura mater. There are also certain funnel-shaped prolongations of the subarachnoid space which surround the cranial and spinal nerves as far as their foramina of exit through the dura mater. These are specially evident around the optic and trigeminal nerves. Thus the Gasserian ganglion of the trigeminal nerve lies in a special little arachnoidal pond, a diverticulum of the cisterna pontis, known as the *cavum Meckelii*. The subarachnoid cerebro-spinal fluid also communicates through the internal auditory meatus with the perilymph of the internal ear. From the cisterna magna there is also a slow downward current around the spinal cord, leading to the lowest end of the spinal subarachnoid space. Some of the spinal fluid escapes en route into the interpial lymph spaces and thence outwards along the peri-radicular lymph spaces. There is also a contrary upward current within the spinal cord itself, leading upwards to the fourth ventricle.

PHYSIOLOGY.

Let me also recall one or two physiological points. By experiments it has been shown that most of the cerebro-spinal fluid is reabsorbed through the cerebral arachnoid spaces, and only a small proportion through the spinal subarachnoid space. It is doubtful whether any absorption takes place from the cisternæ, whose main function is that of large conduits leading the fluid from the ventricles towards the surface of the brain.

The posterior lobe of the pituitary gland pours its secretion into the cerebro-spinal fluid of the third ventricle through the hollow infundibulum. The cerebro-spinal fluid also receives various products of metabolism from the nerve centres through the peri-neuronal and perivascular lymph spaces of the brain and spinal cord, which communicate directly with the general subarachnoid space.

Some poisons, such as salvarsan, which easily gain entrance into the blood stream, are held up and prevented from reaching the central nervous system by the activity of the choroid plexuses, which act as a protective hæmato-encephalic barrier. On the other hand, various other drugs are not held up, but pass through the choroidal filter and can be detected in the cerebro-spinal fluid. Thus, for example, urotropin taken by the mouth can be shown to yield formic aldehyde in the cerebro-spinal fluid, whilst in acute alcoholic poisoning, as we have repeatedly observed for ourselves in hospital, alcohol can be demonstrated in the fluid within two or three hours after it has been drunk.

POSSIBLE SITES FOR WITHDRAWAL OF CEREBRO-SPINAL FLUID.

From what we have already seen, it is evident that there are various ponds or collections of cerebro-spinal fluid, more or less accessible to the clinician, from which we can obtain samples of the fluid for purposes of examination. Let me mention one or two of the less common sites first.

Fractures of the base of the skull may permit of escape of cerebro-spinal fluid from the cranium. Sometimes this occurs through a broken cribriform

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(*Address to be concluded next week.*)

plate of the ethmoid, so that the fluid leaks down into the nose; sometimes it results from fracture of the temporal bone, causing escape of fluid through the ear.

Some years ago Beriel, of Lyon, devised a method of passing a needle along the orbit into the *cisterna basilaris*. The needle was passed along the orbit, close to its outer wall, and pushed through the dense fibrous tissue which fills up the sphenoidal fissure. Clinicians, however, found this method inconvenient, not only on account of its painfulness, but also because of the liability to wound the cavernous sinus.

Another rare and accidental path of obtaining the fluid is from the cavum Meckelii, through the foramen ovale at the base of the skull. This happened to me one day when I was injecting the Gasserian ganglion with alcohol in a patient with trigeminal neuralgia. The needle had been introduced longitudinally along the foramen ovale in the usual way, from before backwards. Before injecting the alcohol, I happened to notice that clear fluid was dropping from the facial end of the needle. This was collected in a test-tube and was found to give the ordinary reactions of cerebro-spinal fluid, including its reaction for glucose. It was thus evident that the point of the needle was in the cavum Meckelii. This route, however, is too uncertain to be reached except by a happy accident and is not recommended as a mode of approach.

We now come to what we may term the normal modes of obtaining the cerebro-spinal fluid.

(1) LUMBAR PUNCTURE.

This is the commonest, simplest, and most useful method for routine withdrawal of the fluid. The spinal theca is entered through one or other of the interlaminal spaces, somewhere between the level of the second lumbar vertebra where the spinal cord ends, and the second sacral vertebra where the fluid-containing cavity of the spinal arachnoid comes to an end. The two widest interlaminal spaces are the third and fourth lumbar spaces. We usually select the fourth space, which, as a rule, is slightly the larger. To identify this space we draw a horizontal line at the level of the summits of the iliac crests; this line intersects the tip of the fourth lumbar spine. The patient is most conveniently placed on a rather low seat, stooping forwards, with his head between his knees and his knuckles touching the ground. In this posture the interlaminal spaces are separated to their maximal extent. Or, if the patient is in bed and unable to assume the foregoing posture, we make him lie horizontally on his left side with his hips fully flexed, so that the knees touch the chin. In an unconscious patient, and even in one who is delirious or violent, this may be accomplished by passing one loop of a roller-towel over the neck, then passing the far end of the roll (both layers) beneath the patient's flexed knees, and pulling them up towards his face. Or a strong stout portmanteau-strap may be used for the same purpose if we happen to be single-handed.

By means of iodine we carefully sterilise the skin in the region of our puncture, usually including an area which covers two or three consecutive interspaces. Then, having frozen the skin with an ethyl chloride spray, we make our puncture, using a fine platinum or nickel needle, which can be boiled without rusting. In a child we may enter straight in the middle line, but in the adult, in order to avoid the dense interspinous ligament, it is convenient to select a point about half an inch to the right of the middle line (if the operator is a right-handed person). We now push our needle horizontally forwards, converging towards the middle line. If we have selected our level accurately no bone is touched and the needle passes directly through the spinal muscles until it reaches the ligamentum subflavum between the laminæ. Through this ligament the needle passes easily with a characteristic sense of resistance and at once perforates the spinal theca which lies in immediate contact with the ligament. In a successful puncture, after the sense of resistance, we suddenly feel that the point of our needle is no longer opposed but in an open cavity. On withdrawing the stilette which fills the needle, the clear cerebro-spinal fluid at once begins to well out, drop by drop.

During this process one or two minor impediments may occur, for which we must be prepared. First, if our level is not quite accurate, or if the patient has osteophytes projecting from his spinous processes or laminæ, the point of the needle may strike a bone. It is no use trying to push forcibly through this: we would only bend or break our needle. The proper thing is to withdraw the needle slightly, change its direction of puncture to a level either slightly above or slightly below, and try again. Secondly, it may happen that although our needle has safely penetrated the ligamentum subflavum, no fluid comes out. This may be due to blockage of the needle by a tiny blood clot, or by a small plug of muscle or fibrous tissue; if so, these are easily cleared away by passing a stilette along the needle. Or again, the blockage may be due to one of the cauda equina roots having floated against the mouth of the needle; if so, by slightly rotating the needle the nerve-root will no longer obstruct it. Or it may happen that the needle has successfully pierced the ligamentum subflavum but has pushed the whole spinal theca in front of it, like the empty finger of a glove, without perforating into the arachnoid cavity. In this case, even although the needle is unobstructed, as shown by the stilette, no fluid comes. If this happens we must just withdraw our needle and start again at the space above or below.

We sometimes read of "dry punctures." This usually means, not that there is no fluid within the theca, but that the operator has failed to penetrate within its cavity. True absence of fluid is a very rare occurrence; it may occur, however, in cases where the theca in the region of the cauda equina is filled with blood clot or with tumour tissue.

It is hardly ever advisable to employ suction to induce the fluid to flow. Normally it exudes, drop by drop, at a moderate pressure of about 20 cm. of water in the horizontal posture. If the pressure is abnormally low, and there is no obstruction within the vertebral canal above, the intrathecal pressure can be temporarily raised at once by Quickenstedt's manœuvre. This consists in compressing the jugular veins in the neck, either by the fingers or by using the hollow air bandage of an ordinary sphygmomanometer.

Having secured the requisite quantity of cerebro-spinal fluid for examination (usually 5 or 6 c.cm. are enough) we withdraw our needle as gently as we had pushed it in, seal the skin puncture with a little collodion, and instruct the patient to lie down for eight or ten hours afterwards.

(2) CISTERN OR SUBOCCIPITAL PUNCTURE.

This method of approach is through the occipito-atlantal ligament, which stretches from the posterior rim of the foramen magnum to the corresponding part of the laminæ of the atlas vertebra. In this way we withdraw fluid directly from the cisterna magna. As can readily be understood, owing to the close proximity of the fourth ventricle which lies in the floor of the cistern, we do not adopt this route rashly or as a routine method of obtaining cerebro-spinal fluid. Like the honourable estate of matrimony, it is "not to be enterprized unadvisedly, lightly or wantonly, but discreetly, advisedly and soberly . . . ."

There are, however, some conditions in which cistern puncture is almost essential for completing a diagnosis; for example, in compressive lesions of the spinal cord, where we desire to compare the composition and pressure of the fluids above and below the level of compression; or again, for therapeutic purposes, when we wish to introduce curative sera into the cerebral arachnoid space, as in certain varieties of meningitis.

If you feel the back of your own neck, the highest vertebral spine to be made out is that of the axis or second cervical vertebra; the first or atlas vertebra has no spinous process. Immediately above the

spine of the axis vertebra you will feel a depression. This is the spot where our needle enters in order to reach the occipito-atlantal ligament beneath which lies the cistern magna. The patient's head should be flexed towards the sternum so as to open out the occipito-atlantal space as much as possible. We find that the most convenient posture is the left lateral, except in cases where we desire to inject a heavy oil, such as lipiodol, into the cistern; in these cases we select the sitting posture. The needle enters in the middle line. It is pushed forwards and slightly upwards, penetrating the thick resistant ligamentum

FIG. 1.

Diagram of cistern puncture.

nuchæ. The correct plane of puncture is one which traverses the depression above the second cervical spine, the upper edge of the external auditory meatus, and the prominence of the glabellum. Seen in profile, these three points should be in the same straight line. (Fig. 1.) As we, of course, are standing behind the patient, we cannot see the glabellum, but we can easily identify the external auditory meatus by getting an assistant to place a pencil horizontally into the patient's ear. We then aim our needle at the level of the upper border of the meatus, keeping carefully to the middle line. The occipito-atlantal ligament is reached at an average depth in the adult of 4 to 5 cm. It is rarely more than 6 cm., although I can remember several athletic men with large cervical muscles in whom the distance was as much as 7 or even 8 cm. Our cistern puncture needle should be somewhat stouter than the lumbar puncture needle, so as to overcome the resistance of the ligamentum nuchæ without bending, and it should be fitted with a bevelled stilette. It should also be marked off in centimetres, so that we may know the exact depth to which it has penetrated.

In a successful cistern puncture, when we penetrate the occipito-atlantal ligament and enter the cistern, we feel a characteristic sensation of entering an open space, exactly similar to the feeling in a successful lumbar puncture. If the needle is wrongly directed it may strike too low, hitting the arch of the atlas, or too high, impinging on the occipital bone just behind the foramen magnum. This fault may be corrected by withdrawing the needle a short distance and trying again, carefully verifying the plane of puncture by means of the external auditory meatus and glabellum. On penetrating the occipito-atlantal ligament and entering the cisterna magna, cerebro-spinal fluid is at once obtained. If no fluid comes and we are certain that our needle is within the cistern, it may be that the middle lobe of the cerebellum is resting against the needle. But this is only likely to occur in two conditions: first, if our needle has been directed too acutely upwards; or secondly, in cases of increased intracranial pressure in which the cerebellum has prolapsed downwards towards the foramen magnum, forming part of a "pressure-cone." Such cases of intracranial pressure, however, can generally be recognised beforehand, and in them cistern puncture will be scrupulously avoided. In a successful cistern puncture we are careful to stop pushing in our needle the moment its point is within the cistern. The depth of the cistern varies from 1½ to 2 cm., which is our margin of safety, for it will be readily understood that if we are incautious and go too far, so as to reach the floor of the fourth ventricle, we might do grave and irreparable damage. In the hands of a skilful and careful operator, however, cistern puncture, although it sounds a hazardous procedure to those who have never witnessed it, is really easy and safe. In these wards you have all repeatedly seen it performed without difficulty and without discomfort to the patient.

(3) VENTRICULAR PUNCTURE.

This procedure, like cistern puncture, should be carried out with equal caution and reserved for exceptional cases. Sometimes it is of the utmost value, both for purposes of diagnosis and treatment. Thus, for example, in inflammatory affections, acute or chronic, of the nervous system, as in meningococcal, tuberculous, or syphilitic meningitis, it is important to compare the ventricular fluid with the subarachnoid fluid, whether derived from the cistern or from the lumbar pond. Again, in brain tumours, by withdrawing fluid from the lateral ventricle, replacing the fluid by air, and then taking radiograms of the air-filled ventricles, we can gain useful information not only as to the presence of internal hydrocephalus, but also as to the exact amount of distortion or displacement of the various cerebral ventricles. Further, in some inoperable tumours at the base of the brain, the headache and vomiting (symptoms which are due to internal hydrocephalus) can be promptly alleviated by ventricular puncture, which is a much less formidable affair than decompressive craniotomy. Some of you remember a patient in the ward a few weeks ago with a tumour of the pons in whom the agonising headache was at once relieved in this way.

In infants ventricular puncture can be carried out through the anterior fontanelle. In older patients, however, we have to penetrate the skull before reaching the dura mater. For this purpose Goetze has devised a steel drill which has a groove running along one side almost to its point. By means of this we quickly drill through the frozen scalp and skull until the point of the drill is through the inner table. We then pass a fine stilette along the groove into the brain. The drill is now withdrawn. A hollow blunt needle is next threaded on the stilette. Once this hollow needle is within the brain substance another blunt stilette, exactly filling it up, is inserted along the needle and the whole affair is cautiously pushed in, millimetre by millimetre, withdrawing our stilette from time to time to see when the ventricular cavity is reached, as shown by the welling out of clear cerebro-spinal fluid. The diameter of the ventricle in the line of puncture can be measured by first noting the depth at which fluid begins to flow, and then, on continuing to thrust in the needle to its far wall, noting the depth at which the flow ceases.

How do we approach the lateral ventricles in the adult skull? This can be done either from the vertex, from the side, or from the back of the head. The main cavity of the lateral ventricle is most conveniently approached from one or other side of the vertex, choosing a point 4 or 5 cm. in front of the upper end of the rolandic fissure. We may either do a vertico-internal puncture, entering our needle about 1 cm. from the middle line and directing it downwards and slightly outwards, or we may do a vertico-external puncture, which I find is rather more convenient,

in which we select a point 4 or 5 cm. from the middle line and direct our needle downwards and inwards. (Fig. 2.)

To puncture the descending horn within the temporal lobe we take a line vertically upwards through the external auditory meatus or a little behind, and enter at a point a few millimetres above the upper edge of the pinna. In this case the needle is so directed that, when looked at from the front, it points towards the outer canthus of the corresponding eye.

The depth of a vertical puncture is somewhat greater than that of a temporal one; in the one case it is a few millimetres more, in the other a few milli-

FIG. 2.

Diagram of ventricular puncture.

metres less than the number of centimetres that go to the circumference of the head. Thus, in a skull that measures 65 cm., we expect to reach the normal ventricle at a depth of about 6 5 cm.

The posterior or occipital horn of the lateral ventricle is approached from behind. We select a point about ¾ in. above the superior curved line of the occipital bone and 1 in. from the middle line, and direct our needle horizontally forwards and slightly outwards.

Lewkowicz, of Krakow, who has done such valuable work on cerebro-spinal meningitis by studies on the ventricular and lumbar fluids, mounts his Goetze drill on a small electric motor such as is used ordinarily by dental surgeons. This, however, is difficult to carry about. Accordingly, I have devised a mechanical breast-drill with a multiplying action which has been made for me by Messrs. Montague, of 69, New Bond-street, W. This particular drill, as shown in Fig. 2, has an adjustable tripod base, whereby it can rest steadily on the convex surface of the head. It also has a movable sleeve on its shaft. This allows the drill-point rapidly to perforate the scalp and cranium and to stop short the moment we are through the bone. The stilette, followed by the hollow needle, blocked in its turn by the blunt stilette, are now passed through the drill-hole and pushed gently inwards until the ventricle is reached.

Contrary to what you might perhaps expect, ventricular puncture is almost painless, so that local freezing of the scalp is all that is required as an anæsthetic, even in the case of children.

The puncture mark on the scalp and cranium is only about the diameter of a large pinhole. As a matter of fact, within a few days after such a puncture it is impossible to detect any mark whatever, whether by the eye or on palpation of the patient's head. If we wish to do a subsequent puncture it is necessary to make a fresh drill-hole.

DIABETES AND OPERATION.

A NOTE ON THE EFFECT OF GASTRO-JEJUNOSTOMY UPON A CASE OF MILD DIABETES MELLITUS WITH A LOW RENAL THRESHOLD.

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As a rule the publication of a single case, however rare, needs justification; in this instance it is not the case but the observations made upon it that make publication advisable.

Duodenal ulcer is not uncommon in diabetes mellitus—one condition does not protect from the other—but it is rare to meet it in a patient suffering from so mild a degree of diabetes as to make operation advisable. A general anæsthetic usually makes the diabetic condition much more grave. The change need not necessarily be sudden or dramatic, and therefore often fails to be recognised. Duodenal ulcer in a man with mild diabetes and a low renal threshold must be very rare, and so I publish the single case.

Diabetes mellitus is diagnosed, as a rule, by the glycosuria accompanying it. Diabetes mellitus is an unfortunate term, it is like "exophthalmic goitre," the name of the disease denotes the two most obvious signs. To say that one has met diabetes mellitus without the patient suffering from glycosuria sounds a contradiction in terms, but is no greater a contradiction than "exophthalmic goitre" without exophthalmos or goitre.

When one starts thinking about diabetes mellitus with a gradual onset one must realise there is a stage at which the patient's powers of burning and storing sugar have fallen from the normal 100 per cent. to 95 per cent., and that the deterioration may be very slow. In my opinion this gradual deterioration often is suddenly accelerated by some injury to pancreatic cells or by infection, and then the diagnosis of diabetes mellitus is made. The difficulty remains, however, that a man with only a 75 per cent. efficient carbohydrate metabolism will be able to eat and drink ordinary food without glycosuria occurring, provided his renal threshold for sugar is normal. In other words, he would be suffering from diabetes mellitus without glycosuria (hypoglycopyresis).

This avenue of investigation has not been explored very fully, and yet it may lead towards the origin of diabetes mellitus in middle life. The case I am recording had a very mild diabetes, his glycopyretic function was of 75 per cent. efficiency, and it seems unlikely that diabetes would have been diagnosed if he had not possessed a remarkably low renal threshold for sugar. At one time his urine contained quite a recognisable quantity of dextrose, whilst his blood-sugar was below 0·12 per cent. (many individuals do not have glycosuria until their blood-sugar reaches 0·21 per cent.).

Clinical Record.

T. M., aged 37. Admitted to hospital May 26th, 1924. He gave a history of being quite well until three years ago, when he began to have attacks of abdominal pain lasting for two or three hours, usually two or more hours after food. Occasionally he had free intervals of three to six weeks. Taking food relieved the pain. His appetite was good. The pain started in the epigastrium and ran round to the back, sometimes kept him awake at night, at other times awakened him in the early morning. Six months ago sugar was found in the urine. The patient, upon interrogation, admitted very slight thirst occasionally and cramp in the legs, but neither of these seemed to be sufficiently intense to suggest diabetes mellitus. The patient was placed upon a diet of 1660 calories containing 44 g. of carbohydrate, 78 g. of protein, and 130 g. of fat, and whilst on this diet his urine contained a small amount of sugar, whilst his blood-sugar was found to be 0·09 per cent. one hour after the mid-day meal. This suggested that his renal threshold for sugar was low. He was given 25 g. of dextrose and it was found that his renal threshold was below 0·11 per cent.

I decided to see the effect of a meal rich in carbohydrates, and on June 6th he was given a lunch containing as much meat and vegetable as he liked, along with a large helping

of suet pudding and plenty of syrup. Samples of blood were taken at intervals of 20 minutes; at 2.10 P.M. his blood-sugar was found to be 0·30 per cent., it rose to 0·33 per cent., where it remained until 3.25 P.M., then it fell to 0·30 per cent., and was still 0·30 per cent. at 4.40 P.M. This was evidence that he was suffering from mild diabetes.

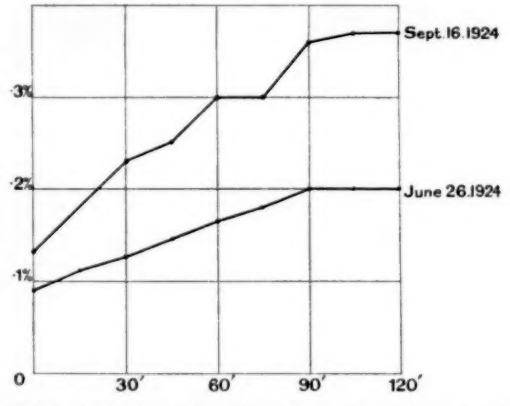
On June 17th he was given 75 g. of dextrose by the mouth at 1 P.M. An hour later his blood-sugar was 0·30 per cent.; 90 minutes after the dose it rose to 0·38 per cent. and had dropped to 0·18 per cent. three hours after the administration of the dextrose. This observation was corroborative evidence that the patient was suffering from diabetes mellitus, based not only on the excessive rise, but also the fact that after three hours the blood-sugar was double the normal fasting. Since the history left no doubt that he had duodenal ulcer as well, it seemed advisable to determine the efficiency of his carbohydrate metabolism before submitting him to operation. On June 24th he was given an intravenous injection of a 10 per cent. solution of dextrose at the rate of 1 c.cm. per minute for three hours. His blood-sugar started at 0·10 per cent. and did not rise above 0·14 per cent.; obviously the dose of sugar was too small to exercise fully the sugar-burning and storing function.

Therefore another intravenous injection had to be given. On June 26th a 20 per cent. solution of dextrose was injected intravenously at the rate of 3 c.cm. per minute for two hours. The blood-sugar started at 0·08 per cent. and rose to 0·20 per cent. after 90 minutes, where it remained for the following half hour. (Chart 1.) This curve proved, since it did not rise above 0·2 per cent., that the patient was able to store and burn sugar at the rate of nearly 0·6 g. dextrose per kilo body-weight per hour, instead of 0·8 g. dextrose per kilo body-weight per hour, which is considered to be normal. In other words, his carbohydrate metabolism proved to have an efficiency of 75 per cent. In the near future I shall offer the further interpretation of this curve along with many others of a similar type.

Operation.—The patient was then transferred to the surgeon. An ulcer was found on the anterior surface of the duodenum; the gall-bladder was thickened; a posterior gastro-jejunostomy was performed; the appendix was looked at, but not removed. The patient made an uninterrupted recovery. Was fed on Benger's food, and later upon custard, jellies, milk pudding, bread and butter, and fish.

The day after the operation the urine contained a considerable quantity of sugar, this gradually diminished,

CHART 1.



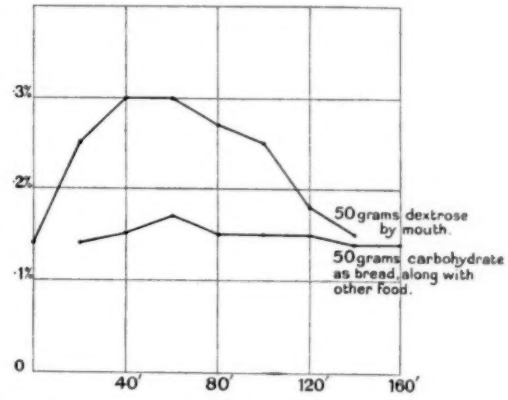
until the eighth day, when it was free. The urine remained sugar-free until the twenty-second day, when minute traces reappeared, but was quite free again later. The patient left the hospital on July 29th, 1924, free from pain and apparently greatly improved.

The question arose as to how far the operation had raised or depressed his sugar-burning capacity. Was the apparent improvement due to gastro-jejunostomy delaying absorption? On Sept. 16th intravenous injection of a 20 per cent. solution of dextrose was given for two hours in a manner exactly similar to the injection of June 26th. It was found that his blood-sugar rose to 0·37 per cent. after two hours instead of 0·2 per cent. There was loss of sugar in the urine at least equal to that during the previous intravenous injection. This observation proved that the patient's carbohydrate metabolism had been depressed by the operation. (See Chart 1.)

How can we account for the apparent improvement? The glycosuria was absent after operation in spite of a diet containing a fair amount of carbohydrate. In order to determine whether the operation had interfered with rate of absorption and also raised the renal threshold for dextrose the following observations were made.

On Sept. 20th the patient was given 50 g. of dextrose at 10 A.M., after he had had breakfast. His blood-sugar started at 0·22 per cent. and rose to 0·3 per cent. after 60 minutes and fell to 0·13 per cent. after 120 minutes. On Sept. 22nd he had breakfast at 9.30 A.M., two poached eggs on toast, cup of coffee and milk, 2 oz. of bread; the carbohydrate content of this meal was approximately 50 g. His blood-sugar

CHART 2.



did not rise above 0·17 per cent. after that meal, the highest being reached at 60 minutes, and later on the same day a second observation was carried out; 50 g. of dextrose was given at 2.5 P.M. His blood-sugar started at 0·13 per cent., rose to 0·3 per cent. after 40 minutes, and fell to 0·15 per cent. after 140 minutes (Chart 2).

I think from this observation we may reasonably conclude that his power of absorbing starch had been diminished, and also from the fact that in spite of his blood-sugar rising to the region of 0·15 per cent. after an ordinary breakfast, and his urine, as a rule, being sugar-free, his renal threshold had been raised.

The operation in this case, as in many cases, led to the progress of the disease, due to the administration of an anæsthetic. In my experience it is extremely rare for a general anæsthetic, other perhaps than nitrous oxide and oxygen, not to lead to a definite deterioration of the carbohydrate metabolism in cases of diabetes mellitus.

WELLCOME HISTORICAL MEDICAL MUSEUM.—The museum, at 54A, Wigmore-street, London, W., will be closed for alteration and reorganisation from Dec. 1st until the end of May. Since the foundation of the Wellcome Historical Medical Museum in 1913, there have constantly been additions of important historical objects acquired by purchase, donation, and permanent loan. The growth of the collections has been so great that extensive alterations in the museum and a complete rearrangement of the exhibits have become necessary. The reorganisation will be of such a thorough character that the Director, Mr. Henry S. Wellcome, has decided to close the institution for several months. Although this may cause temporary inconvenience to medical and other scientific research workers and students, the change, when effected, will prove of great advantage by rendering the arrangement and classification more systematic, and the objects more accessible for inspection and study. Important additions have been made recently to the technical staff. Mr. L. W. G. Malcolm, M.Sc. Camb., F.R.S.E., who has gained distinction in the field of anthropology and allied sciences, has been appointed conservator. Mr. Charles R. Hewitt, who for 22 years was connected with the library of the Royal College of Surgeons of England and 13 years librarian of the Royal Society of Medicine, has been appointed chief librarian.

A MULTIPLE ELECTRICAL STETHOSCOPE.

BY JENNER HOSKIN, M.D. CAMB.,
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THE instrument on which my investigations have been made is the outcome of a large number of experiments, whose aim has been to provide the means of increasing the intensity of sounds produced within the heart and lungs without distortion, and of enabling several persons to listen to them simultaneously.

Historical.

Cabot[1] devised a mechanism whereby, with the aid of levers tapping on drums and of organ-bellows connected with a megaphone, the sounds of the heart and lungs could be imitated, and demonstrated it before the American Medical Association at Boston in 1906. Normal heart sounds and murmurs were transmitted electrically and recorded graphically by Einthoven[2] in 1907. In 1910 Brown[3] reproduced heart sounds by a tuned mechanical relay, consisting of a single microphonic contact and an electromagnetic element. The sounds were transmitted audibly, but with a considerable degree of distortion, over a commercial telephone line in London.

The earliest developmental work on electrical stethoscopes was centred about the carbon transmitter and other microphonic contact devices. Williams[4] was the first to make use of an electro-magnetic transmitter, and in 1921 with this type of transmitter and a two-stage amplifier he secured more accurate graphic records of murmurs. In the same year Squier,[5] using a carbon transmitter amplified normal heart sounds to a group of physicians. In 1923 Abbott,[6] by means of a transmitter, tuned to exclude all sounds except those of very low frequencies, amplified heart sounds and distributed them through a loud-speaker, as did Jacobsohn[7] about the same time in Berlin. The present instrument is, however, largely the result of the experiments of Cabot and Gamble[8] at the Massachusetts General Hospital and their coöperation with the Western Electric Company, who have designed it to their requirements. A multiple electrical stethoscope was first used by them for classroom lectures in 1923.

Description of Instrument.

The instrument used by me, which is a further improvement on that of Cabot and Gamble, consists of the following main parts, assembled in a portable cabinet about the size of a tea-wagon: (1) an electromagnetic transmitter; (2) a three-stage amplifier; (3) a series of electrical filters; (4) a number of output receivers; (5) one six-volt storage battery and one 130-volt "B" battery.

The *electromagnetic transmitter or microphone* is equipped with a special vibratory element, which is placed in direct contact with the patient's skin. It is insensitive to air-waves, and is provided with a special hand grip to prevent the vibrations of the operator's hand from causing undesirable noises. Owing to the high magnification of the sounds necessary, it has been found impossible to use a carbon transmitter or microphone, as the loose contacts introduce a certain amount of noise, which, when amplified along with the faint sounds of interest, tends to obscure them. This is known as the microphone roar, and cannot be eliminated.

The electromagnetic transmitter requires a more powerful amplification, but in a great measure gets rid of this noise. The *three-stage amplifier* employs resistance coupling between the first and second stages, and transformer coupling between the second and third stages, using two high impedance vacuum valves for the first two stages and a low impedance or "power" valve to furnish an adequate energy output in the third stage. This amplifier is capable of a power amplification of 100 million times, corresponding to an increase in intensity over the reproduction amplitude of the ordinary Bell's stethoscope of over 1000 times. There is a potentiometer between the first and second valves, which makes it possible to increase the amplification by small steps, each step giving twice the amplitude of the preceding one.

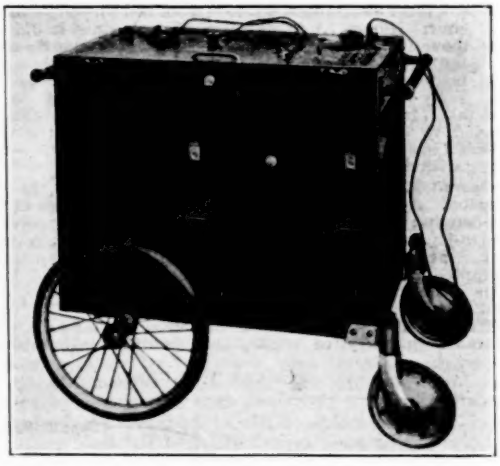
A preliminary analysis with *electrical filters* of sounds of clinical interest tended to show that these were composed largely of frequencies below 1000 cycles, and as the sound frequencies differed widely, it was found of great advantage to permit concentration on any given sound by the use of electrical filters. The function of filters is to allow sounds of certain frequencies to pass and to cut off those of other frequencies.

There are three types of filters—low-pass, high-pass, and band-pass. Low-pass filters allow currents below a particular cut-off frequency to pass freely, at the same time diminishing very considerably the transmission of those of higher frequency. High-pass filters do the opposite. A low-pass filter and a high-pass filter connected in series constitute a band-pass filter, which only allows the passage of currents of a certain range of frequencies.

The instrument has five filters whose cut-off frequencies have been based on 100 hospital cases of cardiac and pulmonary conditions. They are as follows: Low-pass, 130, 400, 650, 1100; high-pass, 130.

For example, the use of a low-pass 400 combined with a high-pass 130 would constitute a band-pass filter permitting the exclusive passage of frequencies between 130 and 400 cycles.

The *output receivers* are on the principle of those of the telephone, and consist of an electromagnetic diaphragm provided with a special cap and nipple, which is designed to fit the tubing of the binaural stethoscope in place of the ordinary chest-piece. Each receiver is provided with a spring clip for attachment to the observer's clothing, so as to leave both hands free for manipulating the control switches of the amplifier and filters. There are ten receiver-jacks, through which any number of receiver circuits up to ten may be connected. The receivers are connected in parallel in the output circuit, so that the volume of sound tends to decrease with the number of receivers in use. A volume control switch, however, is provided for maintaining efficient reproduction, whatever the number of receivers connected in the circuit.



The Multiple Electrical Stethoscope.

Special Uses of the Instrument.

My investigations have been directed to the following uses of the instrument: (1) Examination of the fœtal heart in the later stages of pregnancy. (2) Value of the instrument for ordinary teaching purposes. (3) Value for bedside demonstration of cardiac cases too ill to permit individual examination by a number of students. (4) Diagnosis of difficult heart cases. (5) Value for investigation of pulmonary conditions.

The amplification of the sound is controlled by the moving of a hand along the periphery of a circular disc, marked with the numbers 1 to 22, each number approximately doubling the amplitude of the preceding one. It was found that, when the filters were not in use, the intensity equalled that of the ordinary Bell's stethoscope when the hand was pointing to 8 or 9, but when the filters were in use the hand had to be advanced up to 11 or 12 to obtain the adequate volume of sound.

I investigated the fœtal heart sounds in the later months of pregnancy in a few cases. The fœtal heart could be heard distinctly using the low-pass filter

with the hand of the amplifier about 15 to 18, and on advancing the hand still further the intensity of the sounds could be increased to an almost overwhelming degree. A sound which was probably the placental souffle could also be heard, and investigations are being made with a view to the possibility of diagnosing the position of the placental site by this means. Without the filters there was a tendency to "roaring," especially with high amplification.

The normal heart sounds are best heard with the low-pass 130, which cuts off most of the murmurs and pulmonary sounds. This filter, however, allows the sounds of a bass or baritone voice to pass. The low-pass 400 is useful for distinguishing presystolic murmurs and certain low-pitched systolic and diastolic murmurs. The low-pass 650 seems to be the most useful of all the filters for heart murmurs, as the majority are of frequencies below this. The low-pass 1100 brings out a few of the very high-pitched murmurs and high-pitched râles, but its usefulness is impaired by the amount of external noise which becomes audible when the higher frequencies are allowed to pass. The high-pass 130 has been found extremely useful in conjunction with the low-pass 400 and with the low-pass 650, especially with the latter. This has the effect of greatly diminishing the intensity of, whilst not obliterating, the heart sounds themselves, and so enabling a more thorough concentration on the murmurs. In general, the low-pass 130 has been found the best for the examination of fœtal heart sounds and for distinguishing alterations from the normal of the ordinary heart sounds. The low-pass 400 appears the most efficacious for distinguishing presystolic murmurs. Their determination is rather a matter of accuracy of timing than of hearing, and so it is of advantage to allow the full passage of the heart sounds. For distinguishing aortic diastolic murmurs the band-pass filter formed by low-pass 650 and high-pass 130 has been found to be the most useful.

My investigations have been mainly directed to the heart, but a few pulmonary conditions have been examined. I have been somewhat disappointed with the instrument in this connexion, as the breath sounds appeared to be so altered in pitch and character by the different filters as to make the differentiation of the various types of breathing difficult and uncertain, whilst without the filters it is difficult to separate the external sounds from those in the chest. I feel, however, that further investigation with the instrument in pulmonary conditions is necessary before forming a definite opinion as to its usefulness for this purpose.

The instrument has a definite though limited use in teaching beginners to recognise heart sounds and murmurs. Frequently they take a considerable time to become conversant with what they hear on listening to a heart, and the increased amplitude and the separation of the sounds and murmurs by means of the filters may tend to help them in their early training in auscultation. For more advanced students the instrument has been found satisfactory for the purpose of demonstrating cases in which the interest is centred in the auscultatory phenomena, in that without any external connexions ten persons are able to listen simultaneously, and the teacher can demonstrate the interesting points as they arise.

For diagnostic purposes the electrical stethoscope has, in my opinion, a definite sphere of usefulness as a means of bringing out slight changes in the heart sounds and facilitating the recognition of very faint murmurs such as may be present in some cases of aortic regurgitation. In the bedside demonstration of cardiac cases who are seriously ill the fact of having ten receivers avoids a great deal of the discomfort and fatigue that would ensue through examination by several persons.

There is one point which should be mentioned. In order to obtain the best results very careful adjustment both of the degree of amplification and of the filters is required, and the process of examination, therefore, tends to be a good deal more lengthy than with the ordinary binaural stethoscope.

Suggestions.

There is, in my opinion, room for improvement in diminishing the external noises, which become audible with the higher amplifications. An additional low-pass filter designed to cut off all frequency cycles above 100 would be of great value, both from the point of view of differentiating especially low-pitched murmurs and also for the purpose of eliminating all ordinary voice sounds. This might advantageously replace the low-pass 1100 filter, which has been found to be of very little practical value.

Conclusions.

The multiple electrical stethoscope has, in my opinion, a definite field of usefulness for diagnostic and teaching purposes both in the realms of medicine and obstetrics. I consider, however, it would be a mistaken policy to train students to place undue reliance on the instrument for the following reasons:—

1. It is of the highest importance that their clinical experience should be gained with the ordinary stethoscope, on which they must necessarily rely later on in the course of their practice.

2. In using the multiple stethoscope attention is naturally concentrated on auscultation, which constitutes only one, and in my opinion one of the less important methods whereby a cardiac case is investigated.

My investigations have been made at the Royal Free Hospital with an instrument presented to the hospital by Lord Riddell, its President, of whose generosity I wish to make grateful acknowledgement. I should like to express my indebtness to Dr. A. G. Phear, senior physician to the hospital, who has given me the benefit of his experience both in my investigations and in the writing of this paper. I should also like to thank Mr. Bulloch and other members of the Western Electric Company for the help they have given me in the technical details of the instrument.

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Clinical and Laboratory Notes.

A CASE OF ACHOLURIC JAUNDICE WITH GALL-STONES.

BY H. H. GLEAVE, M.B. LEEDS, M.R.C.P. LOND.,
ASSISTANT PATHOLOGIST, ROYAL INFIRMARY, SHEFFIELD;
AND
ROBERT PLATT, M.D. SHEFF., M.R.C.P. LOND.,
MEDICAL REGISTRAR AND BIOCHEMIST TO THE INFIRMARY.

CASES of acholuric jaundice, complicated by gall-stones, are rare, and the following seems worthy of record.

B., a man of 42 years, had been operated on 15 years ago at St. Mary's Hospital for gall-stones. He was jaundiced at that time. Cholecystostomy was performed, and he was told that he had a large spleen. Since then his skin has always been of a yellowish tinge, and there is a history that his mother's skin was also yellow. He had no further trouble, however, until August, 1923, when he had a typical attack of biliary colic. In August, 1924, he had another attack, and became very deeply jaundiced. He was then seen by Mr. R. St. L. Brockman, of Sheffield. The spleen was still enlarged, and a diagnosis of acholuric jaundice was made, but since the immediate cause of the symptoms was obviously a calculus, Mr. Brockman operated and removed a pigment stone from the ampulla of Vater. There was considerable difficulty in finding the stone, owing to adhesions from the previous operation, and to remove the spleen at the same

operation would have been too risky an undertaking. The patient made an uninterrupted recovery, and although he felt very much better, the jaundice never disappeared. The Van den Bergh reaction was therefore done, and showed that the remaining jaundice was of non-obstructive type.

In April, 1925, the case was seen by Dr. A. E. Barnes and Mr. Ernest Finch, and some further tests were done (see later) confirming the diagnosis of acholuric jaundice. On May 15th, 1925, Mr. Finch and Mr. Brockman removed the spleen, one of us (R. P.) performing a blood transfusion while the wound was being stitched up. He again made an uninterrupted recovery, and his jaundice had disappeared within ten days of the operation. He is now feeling very fit in every way (December, 1925).

Observations: Blood Tests Before and After Operation.

—	1/5/25.	Operation (splenectomy) 15/5/25.	29/5/25.
Red cells	3,250,000		4,470,000
Hæmoglobin	67 %		89 %
Colour-index	1·03		0·99
Blood group	III.		—
Van den Bergh reaction. (Direct test always negative.)	15 units.		0·7 units.
Blood cholesterol	—		0·18 %
Hæmolysis to NaCl — Initial	Patient. 0·525	Control. 0·425	Patient. 0·6	Control. 0·575
Hæmolysis to NaCl — Marked	0·450	0·40	0·525	0·45
Hæmolysis to NaCl — Complete	0·425	0·375	—	—
Hæmolysis to saponin	—		Normal (same as control).	

The urine before operation contained a large excess of urobilin.

Report on Pathology and Histology of Spleen.—Naked eye: A large firm spleen, weight 23 oz.; dimensions 7 in. × 5 in. × 1½ to 3 in. A small accessory spleen (about the size of a walnut) was attached at the hilum. About a quarter of the diaphragmatic surface showed signs of adhesions with great thickening of the capsule. There is extreme congestion

Microscopical: There are numerous thick fibrous septa. The Malpighian bodies are present, undoubtedly reduced in size and number. The supporting framework of the capillaries and endothelial cells of the pulp is unusually prominent. There is extreme congestion.

No foci of hæmopoietic tissue are to be seen. There is much brown pigment, giving the reaction of ferric salts ("hæmosiderin"). This is almost entirely confined to the pulp and hardly appears at all in the fibrous septa, capsule, or Malpighian bodies. It is seen chiefly as a diffuse brown staining (green with the Prussian blue reaction) of the endothelial cells forming the reticulum of the pulp. These cells have often delicate branched processes of cytoplasm which, like the body of the cell, are also pigmented, and in some cases the wall of a sinus or capillary is completely formed by such pigmented cells. In some cells, especially mononuclear cells lying free in the pulp, the pigment is seen as discrete granules or in masses distending the cell.

The general picture is that of hyperplasia of the reticulum cells, with deposition of iron pigment to a much greater extent than in health, though not to the degree seen in some cases of pernicious anæmia.

Discussion.

Cases such as the above, though rare, are by no means unknown.[1] Since hæmolytic jaundice differs from obstructive jaundice in that the blood cholesterol instead of being increased is actually lower than normal,[2 3 4] it is interesting to note that the calculus removed at the first operation was a pigment calculus. In some of these cases such calculi have been found to contain no cholesterol whatever.[5] Unfortunately we did not have the opportunity of examining this one. The blood cholesterol was only estimated after the splenectomy, and was found to be normal. A sharp rise after removal of the spleen is apparently the rule in these cases.[2]

In spite of the operation, at which very little blood was lost, the blood count was better a fortnight afterwards than it had been before. (This has, however, been recorded in a case without transfusion.[1]) The transfusion was performed with 450 c.cm. of defibrinated Group IV. blood, by a method modified from that of Colebrook and Storer,[6] no citrate whatever being added. It was the ninth transfusion of a series which has now reached 28, in which defibrinated blood has been used. In none of the 28 cases has there been any reaction following the transfusion, such as occurs in many cases with the citrate method.

The Van den Bergh reaction is of rather exceptional interest. The first test, done soon after the gall-stone was removed, gave a delayed bi-phasic reaction, presumably because some obstructive jaundice still remained, and the indirect method gave a reading of 15 units. The two subsequent tests gave an indirect reaction only, the reading falling from 15 to 0·7 units within a fortnight of splenectomy.

The resistance of the red cells to hypotonic saline was slightly decreased, and remained so after the operation. Most observers report a return to normal after splenectomy,[7 8] others, as in our case, have found no alteration.[2 9] The resistance of the corpuscles to saponin was tested in view of the suggestion of one of the authors (R. P.[10]) that it might on theoretical grounds be increased while the resistance to saline was decreased. In this case it was normal to saponin. Since doing the tests we find that others have found the resistance lowered in acholuric jaundice to both saponin and saline.[11]

The usual histological findings in the spleen of acholuric jaundice are deposition of iron-containing pigment, and distension of the sinuses by red cells.[12 13] In the present case there is also evidence of hyperplasia of the cells of the reticulum.

We are indebted to Mr. Finch and Mr. Brockman for permission to publish this case.

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A CASE OF RUPTURED ECTOPIC GESTATION.

By ELAINE KNOWLES, M.B. LEEDS, M.R.C.S. ENG.,
RESIDENT GYNÆCOLOGICAL OFFICER, LEEDS GENERAL INFIRMARY.

THIS case of ruptured ectopic gestation is of interest as it occurred in an unmarried girl of 18, with no definite history of pelvic inflammation.

The patient was admitted into the Leeds General Infirmary under the care of Mr. Carlton Oldfield on July 4th complaining of great pain in the lower abdomen, particularly on the left side, and of great weakness and thirst.

History.—The menstrual period began at 13, and had always been regular, the onset being every fourth Friday night or Saturday morning, the first few hours being accompanied by a slight dragging pain in the left iliac region. The loss was not excessive, and lasted 4–5 days.

Present Illness.—On Sunday, June 21st, the period began one day late, and continued, though the loss was very slight, until Sunday, June 28th. On that day she had an attack of pain, dragging in character in the left iliac region, and lost quite profusely for about half an hour. Similar attacks occurred daily until July 3rd, when at 9 A.M. in the morning the pain came on suddenly and with great violence, but was not accompanied by bleeding. It was relieved by "a pill," but returned at 7 P.M., and continued until admission, spreading over the whole of the lower abdomen. Vomiting occurred once on July 3rd after eating a biscuit. Patient never fainted, but felt very weak. She had exposed herself to the risk of pregnancy a month before the onset of symptoms.

Condition on Admission.—Temp., 97° F.; pulse, 120; resp., 27. The patient was very pale, the mucous membranes being practically colourless. Abdominal examination: the abdomen moved very little on respiration. Palpation: great tenderness and rigidity over left half of lower abdomen, much less over right half. Percussion: dullness over left lower abdomen extending little way across middle line.

Pelvic examination: the uterus was slightly enlarged, the cervix a little soft and patulous, the external os admitting the tip of the little finger. No bleeding occurred per vaginam. There was great tenderness in left fornix, with a feeling of fullness, but no definite tumour was felt. A diagnosis of ruptured ectopic gestation was made.

Operation.—Laparotomy was performed by Mr. H. W. Symons, of this hospital. On opening the abdomen the peritoneal cavity was found to contain much free blood and some blood clot. Brisk hæmorrhage was taking place from the left tube, which was ruptured in the inner third of the ampullary portion. Left salpingectomy was performed. Left ovary and right tube appeared normal. Right ovary contained a small cyst. All blood clot and free blood was removed from the peritoneal cavity. The ovum was not discovered. The abdomen was closed.

The *pathological report* on the tube made by Miss E. M. Hickman, M.D., was as follows: Typical decidual tissue and very early trophoblast are present with some hæmorrhage. The wall of the tube shows some lymphocytic infiltration.

The patient made an uninterrupted recovery and returned home on July 13th.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this Section was held on Nov. 24th, with Dr. HUGH THURSFIELD, the President, in the chair.

Prof. H. MACLEAN opened a discussion on

Nephritis.

He said that the old division of this condition into "acute" and "chronic" was the best. The kidney was chiefly an organ for the elimination of water, salts, and waste products. In acute nephritis all its functions were suspended. In the chronic case only one important function was suspended—viz., the elimination of the waste products of nitrogenous metabolism; the organ was able to deal with water and salts. There was no such thing as "chronic parenchymatous" nephritis; either the patient recovered from his acute disease (which was not very common) or he died, or else he passed into a low form of the chronic interstitial nephritis. The books gave different descriptions because the patient was described at different stages. In a typical case of parenchymatous nephritis the one phenomenon present was the large accumulation of fluid; the patient was waterlogged. But the kidney could excrete nitrogenous proteins quite well—the urine was full of them. The clinical picture was one of excessive œdema with albuminuria. When the kidney passed into a state of chronic nephritis it regained its power of excreting water and salts and lost the power to excrete nitrogenous products. A waterlogged patient with vomiting was sometimes diagnosed as a case of uræmia; the vomiting was perhaps due to the fluid, but it was certainly not uræmic. A parenchymatous patient would seem to improve, feeling better and losing some of the fluid, but the change might be really for the worse as he was passing into the chronic condition. In determining the nature of such a case the tests used were helpful.

Urea Estimations.

There was no sense in the elaboration of tests practised in some places; quite as much information was gained from two simple ones—the estimation of blood-urea and of the urea concentration in the urine. For the practitioner the latter was the more important. A high blood-urea was not uncommon in conditions which were not renal at all, but much information could be got from knowing the amount of urea that the patient was capable of excreting under ordinary circumstances. Albumin in the urine was not important except as a hint that there might be something wrong. Albuminuria might be a most serious feature or might mean nothing at all; variations in the amount were not significant except that great variation was not usually found in serious cases. In estimating the urea concentration there was no need to take a 24-hour specimen. The concentration was the important thing, not the total amount. A nephritic case passed a lot of urine in the night when the normal person would not pass any and so might get rid of much the same total amount of urea as the normal person. In doing the urea test the most important point was to starve the patient of fluid for 12 to 15 hours before giving the 15 g. test-meal of urea. Quite often after the period of fluid starvation the urine voided before the test began would be found to contain 3 per cent. of urea, in which case no further testing was necessary. Elaboration of the tests was not only useless but also produced something of a mutiny among the patients.

Treatment.

The best diet for the case of acute nephritis was still debatable, but there was no point in giving large amounts of milk to reduce the protein; it was doubtful, in fact, whether protein did great harm. A small amount of protein could be given with advantage, the main diet being carbohydrates. It was no good trying to "wash out the kidney." The essential feature of the disease was the failure to excrete water, and the kidneys would not wash out, in spite of all the facilities already provided by Nature, such as high blood pressure and a lot of urea in the blood. Urea was one of the best diuretics known, and the addition of another diuretic would not help. It was cardiac œdema that benefited from diuretics. Sooner or later Nature would bring on a diuresis in the renal case, and if this happened to coincide with the administration of some diuretic drug it might be attributed to that drug. The symptoms must be treated as symptoms. The general impression that protein was detrimental to the kidney had been overdone, and many cases did very much better with a fairly liberal amount of protein. Many a patient who failed to improve was really suffering from his treatment—the low, sloppy diet given him. A certain amount of work had been done in America and Germany on the reaction of the kidney to protein, and Prof. MacLean had repeated the experiments. Rabbits fed on protein diet only showed albuminuria and casts and developed apparently a nephritis, but if the rabbit were given the smallest amount of green food along with the protein diet there would be no bad result at all. It seemed clear that it was lack of green food—and probably of the vitamins in it—and not the administration of protein that damaged the kidney. When the symptoms had been established they could be stopped by the addition of green food. There was therefore no experimental evidence that protein was deleterious to the kidney, nor was there much real clinical evidence for the deleterious effect of proteins in an ordinary mild case of nephritis. In acute parenchymatous cases some treatment by drugs or physical means was necessary to get rid of the fluid. On the whole, physical means were better, but large doses of urea helped, as did a diet rich in protein. There was some evidence from America that ammonium chloride in 5–15 g. doses thrice daily for a couple of weeks would sometimes clear up these œdemas, but the difficulty was to distinguish between real reaction to the drug and the coincidence of the natural tendency to get rid of fluid at some stage of the disease.

Prognosis.

Better than clinical evidence was the result of the blood-urea and urea-concentration in the urine tests. It was possible to have a patient with no symptoms at all who was yet bordering on uræmia. While blood pressure and cardiac changes were often associated with renal disease, each might occur independently. The outlook in the cardiac case was bound up with the question of whether or not the

kidney would become affected; if it escaped for a few months the prognosis was not bad, but the physician should be very cautious until he had had the patient under observation for at least six months.

Discussion.

Dr. LANGDON BROWN agreed cordially with what Prof. MacLean had said, and especially welcomed the release from the tyranny of elaborate tests. At a discussion on nephritis 15 years ago he had said that the conventional views might be summed up as restriction of the protein intake, knowledge of the total output of urea in 24 hours, flushing out the kidneys, and the attempt to get elimination through the skin, and he had expressed his belief that every one of these was largely based on error, and should not be regarded as the criteria for the diagnosis, prognosis, and treatment of nephritis. The false idea that albuminuria could be affected by restriction of the protein in the diet was based on some early experiments of Sir D'Arcy Power, who had found an albuminuria in himself after eating a number of eggs. But he had also rowed a course, and the albuminuria he had had was merely the functional albuminuria of adolescence. As a result every nephritic patient had been since told that he must not eat eggs! Patients should not be filled up with proteins, but neither should they be starved of nitrogen, except perhaps in the acute cases. He had used van Noorden's diet, and found patients do well on nothing but fruit-juice and sugar. The urea excreted came from the food, so if the protein was cut down because the urea excretion was low the patient, receiving less and less urea, naturally excreted less until he either became worse or revolted against his treatment. There was a stage in which the hydræmia passed into a failure to excrete things for which the kidney had a threshold. The hot air bath might be a great help. The sweat had been found to contain a great deal of sodium chloride; the removal of the salt caused a reduction of the amount of water retained in the tissues, and the diaphoresis was followed by a daily diuresis. The bath, however, might be dangerous to those who had not much œdema. It must be remembered that although the blood urea was a valuable test, the other and unknown nitrogenous bodies constituted the toxic factor. The proportion of these to urea was not the same in disease as in health. His house physician had had a theory that the administration of hydrochloric acid might turn these amines to harmless chlorides, and certainly the first case to which the acid had been given had greatly improved. The medical profession should realise that many "remedies" for nephritis were futile where they were not actually harmful.

Dr. LEWIS GLOVER said that during the years 1918–1925 906 urine analyses had been done on his patients, and among these 60 males and 90 females had shown some albuminuria. Apparently all these examinations had been useless, and practitioners might as well save their time and their patients' money. Clinical observation had taught him that a small amount of albumin was of no value as an indication of the patient's condition.

Dr. LEWIS SMITH wondered whether we were not assuming more than we had a right to assume, and whether the present way of investigating nephritis was not too chemical. The kidney was a living substance, not a test-tube to fill up with drugs, which might or might not leak through. We had to ask why some cases get well and others do not. It was still possible that the kidney had an internal secretion. Many years ago he had found that treatment by glycerinated extract of kidney substance gave good results in some cases. He had seen cases a great deal worse for the Epstein treatment, and deplorable results from decapsulation. The skin was a very valuable and often neglected means of helping to relieve the kidney. In his opinion, cases of acute nephritis were better with a milk diet which contained very little protein and some carbohydrate.

Dr. A. BOUSFIELD said that he had seen no case of acute nephritis in his practice; it was almost non-existent, because people were taken so much care of in general practice. Yet he had large numbers of cases of pyelitis, cystitis, and chronic renal disease. The prognosis was extremely difficult. It was important to be sure that the albumin came from the kidney and not from the pelvis or bladder. He had known very acute cystitis follow an overdose of rhubarb and claret, and it was surprising how difficult it was to damage the kidneys; they seemed to be much more resistant to toxic materials than other parts of the urinary tract. That he had had only two fatal cases in the influenza epidemic he ascribed to the routine administration of sodium citrate and sodium phosphate; it had been noted that the fulminating cases in soldiers had had a very acute nephritis; perhaps these two drugs had saved the patients by preventing the nephritis. The treatment of nephritis was preventive rather than curative.

Dr. R. S. ALLISON said that at Ruthin Castle the type of case was rather that of general practice than of hospitals, the somewhat vague and early case of middle age with headache, giddiness, and gastro-intestinal disturbances. The blood pressure was high, and there would be a trace of albumin. They had been getting satisfactory results with Calvert's modification of Prof. MacLean's urea-concentration test. In this 15 g. of urea were given at bedtime and the urine collected until 7 next morning, when 2 pints of fluid were given and its excretion then observed for two hours. This gave a range between the maximum and minimum concentration which was useful in cases where the simpler test gave anomalous results. In borderline cases there was often a fairly good excretion of urea, but a difference in the diuresis after drinking, the percentage of urea in this stage being distinctly higher than in normal controls. When the two-hour period was extended to four hours it was found that it was a matter of delay in the time of excretion of the water, for the urea concentration fell markedly in the second two-hour period. This might prove a significant point in the detection of fine degrees of renal impairment. He was convinced that enlarged tonsils and adenoids were an important ætiological factor of nephritis in children.

The PRESIDENT said that the prognosis of acute hæmaturic nephritis in children was good; it was a condition that was cured permanently if it was cured at all.

Dr. ARTHUR ELLIS said that where the acid-ammonia ratio was equal the patient was more liable to nephritis than when the ammonia preponderated. The alkaline type was much more liable to sepsis than others, and the kidney might be infected that way rather than through the strain of excretion. He had found magnesium sulphate injections useful in getting the kidney to work; they produced a rapid and efficient emptying of the intestine, and this took a considerable strain off the kidney. For some unknown reason the addition of a hundredth of a grain of physostigmine to the injection led to a very rapid unloading of the œdema.

Reply.

Prof. MACLEAN, in reply, said that the unanswered question was why two apparently identical cases went different ways, one clearing up, while the other went on to a chronic condition. If the general practitioner could not in some measure use what had been discovered in the laboratory or hospital, then, in his opinion, the investigations were a comparative failure. The Epstein diet, or any régime which included a large amount of fat, meant more fat in the blood, and there was some evidence for the possibility that the œdema tended to be more permanent when there was much fat in the blood. The truth was that very little was known about kidney disease.

SECTION OF BALNEOLOGY

JOINTLY WITH THE

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.

THE TREATMENT OF RHEUMATISM IN INDUSTRY.

A JOINT meeting of these two bodies was held at the Royal Society of Medicine on Nov. 27th, the chair being occupied by Dr. GUSTAVE MONOD (Vichy), the President of the International Society, whose aim, he said, was to bring to bear on such subjects as the one to be discussed to-day—chronic rheumatism—the strength which internationalism gave to every question they dealt with. In France the general hospitals were not open to these cases, and the only opportunity open to the people for institutional treatment of them was to attend the thermal hospitals. And as the general hospitals of Paris did not publish statistics concerning rheumatism, it was difficult to know the degree of its prevalence.

National Loss by Rheumatism.

Sir GEORGE NEWMAN, Chief Medical Officer of the Ministry of Health, expressed on behalf of the Minister cordial congratulations to the Society and the Section on the efforts they were making to grapple with this formidable and protean disease. Through the channel of Government a survey of the incidence of rheumatism among the insured population of this country had been prepared. He had always felt that the first business was to endeavour to measure its prevalence and its gravity in order that all effort should be properly focused and directed. It was necessary to measure and gauge the problem before it was grappled with; there was a tendency, in all nations, to apply remedies without sufficiently careful diagnosis. In this country an effort had been made to measure both the condition which had to be met and our shortcomings in meeting it. The subject to be considered to-day was chronic non-articular rheumatism, such as was manifested in fibrositis, muscular rheumatism, sciatica, &c., and in the second place the form seen in chronic arthritis. In this country, said Sir George Newman, we were losing—or we were spending in benefit much of which was lost—£2,000,000 per annum in this group of disease, and among the insured population of 14 millions, time equal to 3 million weeks, or 60,000 years, per annum. This amount of invalidity was recognised by the Government as an equally serious burden on the State to that caused by such other diseases as cancer and tuberculosis. There was thus need of active organised treatment, as at present it was quite inadequate; in all countries this particular problem should be tackled.

Means of Dealing with the Disease.

What, Sir George Newman asked, was the sound way of grappling with this disease group? He felt sure it was necessary for greater care to be exercised both in discovery of the cause of the infection or the metabolic change in each case, and in regard to its removal. The old idea of making a frontal attack and dealing with the palpable and obvious was neither scientific nor effective; the profession must face and deal with the foci of infection. This meant, above all else, team-work, various experts combining in hospital to deal with the focus which came into their particular specialty—physician, dentist, radiologist, laryngologist, bacteriologist, surgeon. The second aspect of the combat against this group was the raising of the resistant and reactionary powers of the body. Measures must include thermal, electrical, hydrological, massage, and, indeed, any kind of treatment which would place the body in the best position to make its own great answer. It all came back to the question of the seed and the soil. A third point concerned the handling of the evidence of this morbid process as it represented itself in childhood. A beginning must be made at whatever age the disease process first affected the body. The riddle of end-results could not be answered unless the principles of preventive medicine were applied in childhood also. Rheumatism did not enter into death certification in the same way that other well-known scourges entered, and it must be recognised that this disease group formed a national problem in public medicine.

As regards institutions for treatment, to begin with we had, said Sir George Newman, three or four great spa hospitals, all of which could be used to advance the treatment of this disease. At the Ministry of Health arrangements were being sought by which there could be established an arthritis unit, in which diagnosis, treatment, and prevention could all be represented; and the Ministry hoped that one result of this meeting to-day would be to afford some guidance in this respect.

Holland.

Dr. J. VAN BREEMEN (of the Institute for Physical Treatment, Amsterdam) said the report of our Ministry of Health was an exemplary piece of pioneer work, and Holland had nothing to offer on parallel lines. The number of rheumatic patients in Holland was very large, but the scientific study and social means of combating the disease was still in its infancy. Chronic rheumatic symptoms were stubborn non-purulent inflammations of joints, muscles, nerves, and subcutaneous tissues, typical painfulness, and great susceptibility to cold, moisture, and draughts. Four factors must always, he contended, be kept in view: (1) special foci such as in tonsils, teeth, and appendix, or such general conditions as influenza; (2) the constitution, with its tendency to a rheumatic diathesis; (3) derangement of the circulation in the skin; and (4) external circumstances—climate, intoxications, traumata, excessive fatigue. Before instituting treatment each case should be very thoroughly examined. His method with his patients was to first give general treatment directed to improving the circulation, the metabolism, and the state of the nervous system—i.e., by means of baths (steam, hot air, and electric light), douche-massage, and mercury lamp. Next he applied diathermy, local hot air, light baths, and massage as local measures to improve the function of the joints. The form of arthritis known as "rheumatoid tuberculeux" needed actino-therapy, plenty of rest, good food, arsenic, and salt baths. Heroic measures such as strong bath cures or strong steam baths were often injurious here. For arthritis of larger joints he regarded diathermy as of great importance. High-frequency currents often greatly relieved the sufferings of people with a pronounced arthritic diathesis. His view was that the more definite and severe the arthritic diathesis the greater was the influence of diet. This should be sparing, especially in the matter of albumin and carbohydrates. But in rheumatoid tuberculeux a fatty diet was indicated.

It was necessary for the better prevention of invalidity that there should be a wider application of physical treatment and baths, and the skin should be specially studied. There should also be set up clinics and laboratories for conducting a methodical research into this disease group, and it must be recognised that a distinctive manifestation of rheumatism was associated with each occupation. He advocated the formation of an international committee for a large organised effort to combat chronic rheumatism.

Denmark.

Dr. HANS JANSEN (Copenhagen) said he included under the term rheumatism all the affections which Sir George Newman embraced in his report of 1924, and urged the importance of getting established an international uniform nomenclature in this branch of medicine. A year ago he, the speaker, pointed out in his country the need for setting up special hospitals for treating these diseases. In Denmark rheumatism accounted for 58,000 sick days per annum; and there were, among men workers there, 42,000 cases of that disease. At the end of 1923, 7237 people were declared to be totally invalided by it, and

14 per cent. had some form of chronic arthritis. There were, in his country, six or seven private sanatoriums where these conditions could be treated, general hospital cases being chiefly acute ones. In 1923, 3000 subjects of rheumatic disease were treated in Danish institutions and privately, but no Government agencies were at work on the subject. The poor were treated entirely free of expense, liberal grants being made towards the cost. It was the impression of himself and his colleagues that a cold and damp climate induced a considerable part of these diseases. Investigation had been made into the subject, including the effects of X rays and radium.

Sweden.

Dr. G. KAHLMETER (Stockholm) said that there were no exact statistics as to the incidence of rheumatic diseases in Sweden, but, next to old-age infirmities, articular rheumatism was the most serious cause of invalidity. 9·1 per cent. of all cases of permanent invalidity were due to chronic articular rheumatism, the next highest figure being 5·8, pulmonary tuberculosis. For treatment there were available in the country about 50 spas (during the summer), the institutions for medical treatment set up by the Board of Pensions, and the general hospitals. The spas, however, were not large or modern enough, and were only available during two and a half months in the year. The institutions organised by the Board of Pensions were intended to prevent disablement, and treatment was arranged for all rheumatic diseases and neuroses; they embraced 350 beds. Patients usually remained in them from two to three months, and if necessary had dental and orthopædic care, while some who needed it were taught another trade. Two-thirds of the cost at these establishments was paid by the Board (i.e., the State) and the remainder by the patient. Only patients were taken in who offered some prospect of again becoming self-supporting. The hospitals of the country were only intended for acute cases. Coöperation was of the greatest importance to ensure success in the treatment of these diseases, and the great need in Sweden was for a central arthritic hospital in Stockholm in association with the university clinics, especially for the facilitation of research. This would be one of the great objects of the newly constituted committee for combating rheumatism, of which the speaker was secretary.

Great Britain.

Dr. R. FORTESCUE FOX said many were of the opinion that the kind of cases under discussion were becoming increasingly prevalent. In the case of chronic rheumatism the profession was dealing with sick persons who were not, as a rule, hospital cases, but were cases who could be treated in out-patient departments, or special clinics, and at the spas and health resorts of the country. It was a very difficult matter to apply the physical remedies with the best effect; these cases had to be treated from many sides. Large numbers had an infective element, which ought to be removed if it could be discovered. Other methods which presented themselves were vaccines, thyroid treatment, and drugs. It was certainly a disease of cold and damp climates, and much could be done to counteract the ill-effects of climate by the right use of waters and baths. The claim which had been made that all the British spas could treat chronic rheumatism with success he regarded as a just one. They all had in common one important agency, well-appointed bathing establishments. In a large proportion of cases one could provide effectual and successful treatment by external methods alone, as given under medical direction and with proper skill. It was now clear that a condition of extraordinary sensitiveness underlay the rheumatic state, and in using heat and cold in rheumatic cases one was working with edged tools. He had seen excellent results, but he had also known many failures due to want of knowledge and care. It was very desirable that the benefits due to external treatment at spas should be made available in the towns. Was this work best done in connexion with hospitals, or ought there to be set up rheumatism clinics? In favour of the latter was the fact that intensive study and a proper grouping of maladies could be carried out, and there could be a liaison with institutions which were conducting special research. In such clinics there must be a whole-time expert medical director, with a suitable linkage with research establishments.

Dr. R. L. J. LLEWELLYN pointed out the gravity, from the national health standpoint, of the recent report of the Ministry of Health on the prevalence of rheumatic diseases in this country. Nothing could so raise the resistance of people to rheumatic infection as the discriminating use of hydrotherapeutic procedures, and there was need for these in the case of people employed industrially in the large centres of population. In Great Britain there were between 45,000 and 50,000 children of school age with rheumatic heart disease. Recently in a children's hospital in London it was found that out of 172 cases of rheumatic fever 66 per cent. developed heart disease; 22 of the 172 died and 38 were permanently invalided. One in every five of the population living at the age of 10 would, on the figures collected, succumb to organic heart disease. A campaign against rheumatic diseases similar to that against tuberculosis was much needed.

Dr. M. B. RAY said the yearly number of people in Greater London who were likely to seek advice in respect of rheumatic diseases was 60,000. In England and Wales some 372,000 suffered from some form of rheumatism. Not all cases of non-articular rheumatism required treatment other than could be given by the general practitioner. It was, he thought, safe to say that in the London district alone there were 22,000 insured persons who were likely to benefit from more enlightened treatment; a certain number needed in-patient care. Moreover, satisfactory research into causation could only be carried out if patients were constantly under observation.

Switzerland.

Dr. F. KORNMANN (Ragaz) said the treatment of these cases in Switzerland was available for both the well-to-do and the poor, the latter being assisted by grants from private bodies and from Government endowments. A large proportion of the cases in the country came from Geneva and places on the shores of the lake. The methods of treatment were electricity, baths, ionisation, massage, and protein therapy. Slight and early cases were often entirely cured, chronic cases were sometimes improved, but sometimes these latter proved intractable.

Roumania.

Prof. THEOHARY (Bucharest) said cases of arthritic and chronic rheumatism were treated at four spas in the main, other spas being mud and strong brine ones. Four classes of cases received some form of assistance—namely, civil servants, employers in small industries, labourers, and soldiers and the very poor. The last-named were treated in the sanatoriums organised by the Red Cross. Public bodies in the country were now subscribing increasing amounts to help those among the poorer population who stood in need of spa treatment for chronic ailments.

Spa Treatment.

Dr. KERR PRINGLE said that seven hydropathic hospitals in this country were entirely devoted to the treatment of these conditions. At Bath the largest hospital had 136 beds, with 1200 patients, while a small one had 10 beds. The Devonshire Hospital at Buxton had 300 beds and 4000 rheumatic cases. St. John's Hospital, Droitwich, had 30 beds with 603 annual cases. At Harrogate the Royal Bath Hospital had 150 beds and 2500 cases. Strathpeffer had 15 beds, and 80 or 90 cases under treatment, while at Woodhall Spa there were 30 beds available for this disease and 188 cases. At all these institutions there were considerable waiting-lists, and many cases yearly had to be refused admission. In Harrogate last season 140 cases

had to be refused as unsuitable, without even seeing them. In Bath 12 per cent. of the men had osteo-arthritis, 6·9 per cent. women, while in Buxton the proportions were 6·6 per cent. men, 8 per cent. women. The Ministry of Health figures gave 8 per cent. in men, 9 per cent. in women. He contended that no case should be labelled one of osteo-arthritis unless a verification had been reached by means of X rays. An important matter to be taken into consideration was the environment of the patient. For rheumatic cases the most useful type of bath was the massage-douche, and the paraffin-wax bath at Harrogate had proved distinctly useful in certain types of cases. With regard to results, he said it was difficult to state these in figures. In cases of fibrositis and neuritis good results would be seen within a few weeks of the patient leaving the hospital; but in chronic joint cases it might be months before it could be said that there were definite results, and even then it was a question of degree. Patients' reports on their own condition were well known to be worthless.

Dr. CHARLES W. BUCKLEY spoke of rheumatic disorders in industry in the light of the experience he had gained as physician in the largest mineral water hospital in the country (the Devonshire Hospital), one which dealt with 4000 patients per annum drawn from the industrial classes. These cases among workers could be divided into four groups. In the first group were cases of rheumatic fever with its sequelæ, which might require long treatment, but for which any well-equipped institution would suffice. The second group embraced fibrositis of muscles, nerves, or joints, a group which reacted better to spa treatment than to any other, though some might require continued massage or other physical treatment, and attention to hygiene and diet after returning home. Thirdly, there were the cases of rheumatoid conditions. Many cases were now being sent to spa hospitals who were suffering from chronic osteo-arthritis of such degree as to be incapable of material improvement, and were occupying beds which could be used to greater advantage. Home treatment, where the services of a nurse skilled in massage could be obtained, was best for these, with such orthopædic treatment as could be made available under some scheme. His fourth group were the gouty, and these, he said, reacted more effectively to treatment at a suitable spa than to any other method, and this would definitely reduce the frequency, the severity, and the duration of attacks. The three principal measures required for these diseases were, first, those directed to the cause of the disease. This might be infective, or metabolic, or traumatic; sometimes the cause was dual. Attention to defective elimination was valuable in metabolic and toxic cases. Secondly, there were measures directed to increasing the patients' powers of resistance, by diet, tonics, and the improvement of home conditions. The third class of measures was the most difficult to obtain for the majority of patients—namely, those aiming to remove disabilities and their associated pain. These could only be satisfactorily secured for the industrial classes at present at the spa hospitals, but much might be done elsewhere under a well-organised scheme. Dr. Buckley proceeded to recount the chief advantages possessed by the great spa hospitals for the treatment of the conditions under discussion. There was a need for the education of the public concerning the causative factors and the importance of early treatment; also medical practitioners required more training in the recognition and treatment of ætiological factors. He also advocated the setting up of "rheumatic clinics," where facilities for various examinations could be provided and where the doctor could have consultation over his difficult cases. He felt doubtful as to the possibility of establishing hydrotherapy on any scale, save at the largest centres, though he was convinced of its value. The great need of the moment, he said, was that a skeleton scheme should be devised and put into force, either by the Government, the approved societies, or some other body. Perhaps no more worthy object existed for the activities of the Red Cross Society.

Discussion.

Mr. W. A. APPLETON, an official in the trade-union movement, said his organisation found that 6 to 10 per cent. (varying according to occupation) of the sickness among the workers was due to this disease, and he believed the actual amount of disability among artisans was really much greater than those percentages indicated. There was a need for unified action on the matter, and he would be glad if medical men would talk over the situation with those who were intimately concerned with the industries of the country. People expected the State to do everything, but the State moved slowly.

Dr. MAX BERG (Berlin) expressed the hope that some day Germany would join the League of Nations, and remarked that it would be a great advantage if his country was permitted to join this Society for the scientific study of hydrology, a subject which his countrymen were known to have furthered in a definite degree.

The PRESIDENT thanked the various speakers for their contributions, and expressed the hope that the Section of Balneology of the Royal Society of Medicine would show an active interest in the concerted effort being made to deal with these widespread conditions.

An informal conference in furtherance of future lines of action was held in the afternoon.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

AT a quarterly meeting of this Association, held in the rooms of the Medical Society of London on Nov. 17th, Sir FREDERICK MOTT, the President, in the chair, Dr. JOHN CARSWELL read a paper entitled

Insanity and Crime: Some Suggestions Arising out of the Atkin Report.

It could, he said, be taken that, at least in form, the McNaghten Rules had received such fresh support as to preserve them in being for another generation. Yet the medical profession would not admit that the controversy was ended; indeed, there seemed a desire for adjustment of the medical and legal points of view. The rule recommended by the Atkin Committee read as follows:—

"It should be recognised that a person charged criminally with an offence is irresponsible for his act when the act is committed under an impulse which the person was by mental disease in substance deprived of the power to resist."

The committee added: "It may require legislation to bring this rule into effect," and later, "We have no doubt that if this matter were settled, most of the criticisms from the medical point of view would disappear."

Members of the Association, Dr. Carswell said, would acquit themselves as medical men acquainted with the clinical aspects of disorders of mind of expressing their ideas as to what they might regard as the test of criminal irresponsibility in these terms, which were lawyers' terms, and indeed, all the trouble had arisen in that way. Did the accused know what he was doing? And if he knew, did he know that it was wrong? These were the formulæ framed by lawyers, and the psychiatrist had no responsibility for them. Fitzjames Stephen, in his "History of the Criminal Law," Vol. II., p. 174, after considering Maudsley's observations, said:

"I understand by the power of self-control the power of attending to general principles of conduct and distant motives and of comparing them calmly and steadily with immediate motives. Diseases of the brain and the nervous system may cause definite intellectual error, and if they do so, their legal effect is that of the innocent mistakes of fact. Far more frequently they affect the will by either destroying altogether or weakening to a greater or less extent, the power of steady, calm attention to any train of thought."

Dr. Carswell went on to say that a series of cases in recent years were available to show that judges had charged juries in the sense indicated, and even in the much debated Ronald True case Justice McCardie left three questions to the jury; the first two were in the terms of the McNaghten Rules, and the last was expressed in these terms:

"Even if the prisoner knew the physical nature of the act, and that it was morally wrong and punishable by law, yet was he, through mental disease, deprived of the power of controlling his actions at the same time? If yes, then, in my view of the law, the verdict should be 'Guilty but insane.'"

Dr. Carswell said the point he wished to make was the following: All the judges who delivered charges in the sense he had quoted agreed that uncontrollable impulse could be read into the McNaghten Rules—i.e., the rules were logically insufficient unless some such idea could be incorporated with them. The recommendation was not based upon any unproved or doubtful category of mental disorder, nor upon any principle of criminal responsibility not already recognised. His object in this communication had been to start a fresh discussion of the problem of insanity and crime from what he understood to be the point of view of the Atkin Committee, with the hope of reaching some points at which medical men could agree that the legal conception of responsibility of the insane was more in accordance with the clinical facts as they were known to psychiatrists than at present was the case.

Discussion.

Dr. BARKER SMITH said that people were responsible in various degrees for what they did, and that was largely proportional to their education and culture. Many men acted with the same quick, unreflective impulse as lower animals. This question of responsibility in a particular person was a question for the medical man, not for the lawyers.

Sir H. BRYAN DONKIN said Dr. Carswell seemed to think that the conception of irresistible impulse was implicit in the McNaghten Rules, a very strong statement to make in his, the speaker's, view. And he did not see that any practical result could arise from the view that those ideas were implicit in the rules.

Dr. G. HENDERSON said he did not know that the term "irresistible impulse" had ever been properly defined, yet it was due that this Association should have a definition of it. In medico-legal cases the question of responsibility constantly came up, and if this question of irresistible impulse was likely to be brought into them, the issue would be more complicated than at present. Another important kind of case was that in which a prisoner's state of mind was questioned, and sometimes the man would be sent to a criminal asylum without having been tried—i.e., without the question having been decided whether he had committed the crime or not. He suggested it would be well to try to arrive at that point in the cases in which there was a certain amount of doubt.

Dr. G. D. MCRAE said a very important question arising out of this discussion was, "Is an insane man a criminal, whatever he does?" To him, it was cruel to say that a man ailing mentally was guilty for anything he did, and he regarded the expression "criminal lunatic" as archaic. An individual should be tried to prove whether he committed the act, or not. If he did commit the act but was found to be insane, the verdict should be "Proven but insane," for "guilty" in this relation was out of place. The question of responsibility should be left to the legal people. It had been said that medical superintendents of mental hospitals acknowledged the principle of partial responsibility by placing patients on parole; but the actual fact was that until the patient was certified cured the responsibility for him while out on parole attached still to the medical superintendent.

Dr. T. B. HYSLOP said that until the medical profession awakened to the fact that in these cases it gave evidence on a question which was not at issue—namely, that of insanity, and the judge charged the jury on the question of responsibility, they would always be playing at cross purposes, and working under those absurd McNaghten Rules, which had caused grave injustice. Medical witnesses should see to it that they were examined and cross-examined on the real question at issue in the case.

Dr. W. C. SULLIVAN said the McNaghten Rules were really founded on a contradictory and unjustifiable view of the jury. The rules assured a degree of stupidity on the part of the jury which required that they should be instructed by the judge, and there was the further requirement that the medical evidence should be filtered through the strainer of the McNaghten Rules. The doctor giving evidence had no opportunity of expressing his views in full and in clinical terms, because the assumption was that the jury could not understand them. Yet that same jury was supposed to be gifted to the much greater degree required to distinguish between an act being irresistible and one which was unresisted. The present state of things resulted from excluding the jury from having a fair issue placed before them, hence the question was placed in the hands of the judge. It must always be borne in mind that there were very few murderers in whom something abnormal could not be found, and that abnormality could be magnified by medical witnesses to produce a verdict of "Guilty but insane"; but if the matter were left to the jury they would form their own opinion of the facts and on the history and the various episodes brought out.

Dr. J. M. MACKENZIE asked whether irresistible impulse was supposed to operate in persons who were sane, as well as the insane. If so, where could the line of demarcation be drawn? Much might be learned on that from Dr. Rivers's book, "Instinct and the Unconscious."

Mr. D. CARSWELL spoke from the legal standpoint. He agreed that some of the hard things which had been said about the McNaghten Rules were justified, but asked how medical men proposed to get rid of them, as they were operative. He therefore advocated attempts being made to arrive at a concordat with the legal profession on the matter. He knew at least three senses in which the phrase "irresistible impulse" was used by lawyers.

Dr. J. G. SOUTAR remarked that even after all this argument he had never yet seen a case in which he could say that irresistible impulse was the only evidence of mental disorder in a person. When such a plea was advanced, investigation showed that a definite idea had preceded the particular act, perhaps for a long time. Impulsive acts were known to occur in perfectly sane people, and in them it was well known that the acts did not indicate insanity. If the McNaghten Rules could be wiped out, members of the Association would be in a much better position as medical witnesses. The medical man had to testify to the facts, and leave it to the judge and jury to say whether the facts testified to by skilled observers were indicative of that degree of unsoundness of mind which rendered a person irresponsible for his acts.

Dr. PERCY SMITH said the Association had done its best to show that the McNaghten Rules should be done away with, and that every case should be tried on its merits, with the fullest possible evidence. But the profession had been saddled with the rules by the verdict of the Court of Appeal in the True case, when Lord Birkenhead said they were the law of the land.

Dr. CARSWELL, in a brief reply, said he recognised that the Association had remained steadfast to its attitude; that the business of the medical man was to testify to the state of mind of the accused. That was the only logically sound position.

Reviews and Notices of Books.

DISEASES OF THE CHEST.

Physical Diagnosis of Diseases of the Chest. By JOSEPH H. PRATT, A.M., M.D., and GEORGE E. BUSHNELL, Ph.D., M.D. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 522. 24*s*.

THE authors divide their work into two parts. The first deals with the physical signs of the lung, the second with those of the heart. They rightly insist that the study of physical diagnosis should begin with the normal chest and proceed from that to the abnormal. Consequently they devote a special chapter to a careful survey of the localised peculiarities of the chest in health. The physics of percussion and auscultation are discussed in detail, and in general sound reasons are offered for the various phenomena observed. A full chapter is reserved for the changes due to the presence of tuberculosis. Attention is drawn to the adventitious sounds often heard in the costo-pleural sinus and to the mistake sometimes made of interpreting them as evidence of pleurisy.

The second portion of the book, devoted to a study of the physical diagnosis of the various cardiac conditions, is particularly well arranged and lucidly expressed. We would suggest that pulsation in the second right interspace is more likely to be due to retraction of the lung owing to tuberculosis than to mitral stenosis. There is a refreshing candour in the statements that "it is not easy to time murmurs accurately," and that "when instructors claim that they can do so when the heart-rate is rapid, students may comfort themselves with the knowledge that the teachers are probably mistaken and are overrating their auditory ability." On p. 371 Mackenzie *or* Burnley should, of course, read Mackenzie of Burnley.

The book can be placed with confidence in the hands of the student.

DISEASES OF THE EYE.

Swanzy's Handbook of the Diseases of the Eye and their Treatment. Thirteenth edition. Edited by LOUIS WERNER, M.B., F.R.C.S.I., Professor of Ophthalmology, University College, Dublin. London: H. K. Lewis and Co. 1925. Pp. 698. 21*s*.

THERE will always be a demand for an ophthalmic text-book neither bulky nor costly, but complete enough to satisfy the needs of the student. Twenty years ago Swanzy's text-book was deservedly reputed to be the best of its sort. To-day it has to compete with others of its size, but undoubtedly it remains one of the best. The structure of the book is substantially the same as in 1919, the date of the twelfth edition. There are some additions which add 25 pages to the book, and the whole is completely revised. The most notable alteration is that whereas in former editions diseases of the choroid were dealt with along with those of the iris and ciliary body as all belonging to the uveal tract, in the present edition choroidal diseases are classified along with retinal ones. If this is not so correct from the morphological point of view it is certainly more convenient from the clinical. In the chapter on diseases of the iris, which has been largely rewritten, we note that dental infection is hardly mentioned as a cause of inflammation of the uveal tract. Since Mr. William Lang drew attention to the subject some years ago it has come to be considered a by no means unusual cause. It would perhaps assist the student if writers of text-books were to indicate on which parts of their subject differences of opinion are legitimate. For instance, if the student is told anything at all about the pathology of retinitis pigmentosa it is only fair that he should know that different authorities hold two diametrically opposed views on it.

One of the features of this volume is the excellence of the illustrations. Of the few that have been added in the present edition perhaps the most important are the diagrams which illustrate the relations between the different parts of the visual cortex of one side and the corresponding parts of the visual fields. As we remarked in our review of the twelfth edition, the work would be improved by a short chapter on the therapeutics of the eyes including local anæsthetics. There is an unusually full appendix on the visual requirements for the public services which are not the same as when the last edition was published.

SURGERY.

Modern Surgery—General and Operative. Ninth edition. By JOHN CHALMERS DACOSTA, M.D., LL.D., F.A.C.S., Professor of Surgery, Jefferson Medical College, Philadelphia; Consulting Surgeon, Philadelphia General Hospital. London and Philadelphia: W. B. Saunders Company, Ltd. 1925. Pp. 1527. 45*s*.

THIS ninth edition has been entirely revised and reset, and though now brought up to date has been kept within the same limits. Certain chapters, previously considered desirable, have been omitted to make room for the new material; and there can be no doubt that asepsis, antisepsis, surgical bacteriology, and bandaging are best relegated to smaller handbooks. This edition was largely prepared by the author while he was on a bed of illness, and many of the chapters are the result of coöperation with his colleagues. The result is a very fine text-book of surgery, which evidently has an established reputation in the United States. One of its most striking features are the chapters at the end of the book on X rays, radium, and electrothermic methods of treatment. They give a detailed account of the uses of these various aids to the surgeon and provide useful notes for reference by practitioners and students. The book is freely illustrated and well got up.

Text-book of Orthopedic Surgery for Students of Medicine. By JAMES WARREN SEVER, M.D., Boston, Massachusetts, Assistant Orthopedic Surgeon, Children's Hospital, Boston; Instructor in Orthopedic Surgery, Harvard Medical School. New York: The Macmillan Company. 1925. Pp. 353. 20*s*.

As its title suggests, this is a rather elementary work, suitable as an introduction to the subject for students of medicine and as a survey of the scope of the specialty for nurses and even for educated laymen. Dr. Sever, in his preface, claims with justice that the book is written in simple terms, and that the student will not be led astray if he follows the advice here given. If, however, information is wanted as to the details of treatment or the technique of an operation it is to a more advanced and pretentious work that the inquirer must turn. For instance, although the author discusses the treatment of congenital dislocation of the hip and the necessary retentive appliances, he gives no hint as to the manipulations which may be necessary for the reduction of the luxation. Some other subjects are dealt with in similar fashion, while tuberculosis of bones and joints receives a good deal of attention. Even here the treatment of Pott's disease (the author has knighted the great Percivall) by the Albee and Hibbs methods is dismissed in a dozen lines of large print, and we have found no allusion to other operative procedures which have been advocated in caries of the spine. Hip disease and its treatment, especially that with the Bradford splint, and tuberculosis of the knee, ankle, and foot are dealt with from a properly conservative point of view. The author's remarks as to the importance of free removal of the diseased bone, if any cutting operation becomes necessary, are to be commended, and we endorse

his conclusion that in tuberculosis of the ankle affecting adults the method of choice is generally amputation. The surgery of obstetrical paralysis of the shoulder is dealt with at some length and operations for its relief described, but the references to the operative treatment of other paralyses are sketchy and inadequate. The preparation and fitting of splints and supports are well described, and the technique of plaster-of-Paris is as thorough as would be expected from a member of the Boston School of Orthopædics.

POST-MORTEM APPEARANCES.

By JOAN ROSS, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Assistant Pathologist to St. Mary's Hospital, London. With Preface by E. H. KETTLE, M.D., Professor of Pathology, Welsh National School of Medicine, Cardiff. London: Humphrey Milford, Oxford University Press. 1925. Pp. 216. 7*s*. 6*d*.

THIS well-printed little book sets forth in as compact a form as possible the characteristic post-mortem appearances encountered after death from various causes. The introductory remarks include a brief account of the method of performing a post-mortem examination and of the methods for preserving specimens for museum purposes. Section 1 describes the appearances seen after death from various physical and chemical agents; this is followed by sections dealing with the various diseases, general and systemic. There is a useful appendix giving, among other things, tables of average normal weights and measurements of organs.

The typical post-mortem findings in various types of disease are described in a brief and practical manner, and the book will be found most useful both to the student and to those who may be called upon to perform an occasional post-mortem examination.

DISEASES OF CHILDREN.

Twelfth edition. By the late Sir JAMES F. GOODHART, Bt., F.R.C.P. Edited by G. F. STILL, M.D., F.R.C.P., Physician, King's College Hospital, and Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1925. Pp. 966. 28*s*.

THERE can be few medical readers who are not familiar with this well-known work, which has now been a standard text-book for 40 years. Dr. Still has carried out with notable success his object of bringing the book up to date without unnecessary alteration of its form. This twelfth edition contains four new chapters; encephalitis and erythrœdema are included for the first time, and separate chapters are devoted to diabetes and the purpuras. A number of minor additions have been made throughout the book. The popularity of "Goodhart and Still" among students and practitioners will be maintained by the new edition.

ANATOMY.

Hand-Atlas of Clinical Anatomy. By A. C. EYCLESHYMER, B.S., Ph.D., M.D., and TOM JONES, B.F.A. London: Henry Kimpton. 1925. Pp. 424. 50*s*.

THIS atlas is a further growth and development of the "Manual of Surgical Anatomy" which was prepared for the use of the American Medical Services during the late war. Female anatomy has been included, and a certain amount of rearrangement and introduction of new plates has taken place. There is no doubt that the work, especially in its original form, met with a very good reception and demand in the country of its birth; equally without doubt it would be of considerable value to anyone called upon to carry out some surgical work, but possessing little experience to direct him and no anatomical memory as a guide. We confess, however, that we feel some disappointment with the book. It is little more than a collection, necessarily incomplete, of plates of gross anatomy. Such anatomy should be unnecessary for the operating surgeon, although it is conceivable that he might be glad of some anatomical advice in out-of-the-way circumstances. There are many points of surgical interest which could usefully find a place in an anatomical work for which we have looked here in vain—for example, the varieties in the cystic artery, or the palmar relations which are so fundamental in Kanavel's work on infections of the hand. A figure is certainly given from Kanavel, but no attention is paid to the areolar palmar spaces and their relations, and in the scheme of incisions on p. 274 the value of the lines shown would be vastly increased if there were some references or an explanatory diagram similar to those in the figure on p. 128. As in most books with many figures, some slips have missed the eye of the proof reader; we cannot help feeling doubt, too, about the nerve to which attention is called on p. 125. The figures are clear and good, and those showing usual incisions are among the best we have seen. A full and good explanatory index ends the volume, which is well produced and printed.

A Short History of Anatomy. By RICHARD H. HUNTER, M.D., Lecturer in Anatomy, Queen's University, Belfast. London: John Bale, Sons and Danielsson. 1925. Pp. 51. 2*s*.

THE time of a student of to-day is so taken up with things that have to be done that it would be cruel to suggest the further task of historical research, but this booklet, containing a quantum of reliable information, can be read through in a very short time, and will give the reader an idea of when some of these masters of ancient medicine had their being and of some of the things they did. Only those who love these dim, old, half-forgotten figures will try to get on better terms with them, but all ought to understand that medicine and its relations are not growths of yesterday and to-day, but that their roots were planted in very remote soils, and that their upgrowth was fostered in the past by many great and learned men. We would like to see brochures like this one in the hands of all students of medicine.

SYMPATHETIC DISORDER.

Vagotonies, Sympathicotonies, Neurotonies. Les états de désequilibre du système nerveux organo-végétatif. By A. C. GUILLAUME. Paris: Masson et Cie. 1925. Pp. 281. Fr.14.

THE output of books dealing with the sympathetic nervous system has been on the increase during the last ten years, in particular since the clinician began to apply to his own studies the conclusions drawn from experimental and pharmacological researches by the physiologist. These volumes, as must be admitted by those who have had occasion to read and test them, have been of rather pronounced inequality in merit, for not a few have been characterised by superficiality and too many by the tendency to simplify the subject by ignoring its complexities; still another fault is the habit of interpreting obscure phenomena by reference to mechanisms which have themselves scarcely emerged from obscurity.

On perusal of Dr. Guillaume's handy volume we think we may say these imperfections are less in evidence than usual in books dealing with its topic. The author takes the well-known dicta of Eppinger and Hess as to the differentiation between the two clinical types of vagotonus and sympathicotonus, and after an independent study of his own comes to the conclusion that mixed types are more common than either of these, and stresses the importance of recognising, as is too often forgotten, that the phenomena

attributable to sympathetic disorder which the clinician encounters are occurring in an intact organism and not in organs which have been isolated as in most physiological and pharmacological experiments. His book really serves as a kind of introduction to the subject, and it is one which we consider will repay close examination, for the author is temperate in his assertions and cautious in his conclusions.

NEUROLOGICAL DIAGNOSIS.

Kompendium der topischen Gehirn- und Rückenmarksdiagnostik. Sixth revised and enlarged edition. By ROBERT BING, Professor in the University of Berne. Berlin and Vienna: Urban and Schwarzenberg. 1925. With 102 illustrations. Pp. 242. M.9.90.

WE have on several occasions given hearty recommendation to this now well-known and appreciated compendium of neurological diagnosis. It has appeared, we are informed, in Spanish, Russian, Polish, French, and Hungarian editions, as well as in English. Its commendable features are its relative uncomplexity, its clarity of exposition, the absence of controversial matter, and the conspicuously useful and simple diagrams scattered liberally through its pages. Learning is thus rendered as easy as possible by every device known to the teaching expert. On previous occasions we have found statements open to criticism and in need of correction, and it is satisfactory to note that some at least of these have been altered; in particular, it is now stated (p. 201) that certain involuntary movements are not caused by "irritation" but are of the nature of release phenomena. On the other hand, we consider the statement (p. 228, footnote) that spasmodic laughing and crying may be caused by the "irritation" of lesions in the vicinity of the thalamic reflex centres unfortunate and in need of modification.

L'Innervation périphérique. By Dr. EMILE VILLIGER, Professor in the University of Bâle. French translation by Dr. PIERRE HOFF, Chef des travaux anatomiques at the University of Geneva. Paris: E. Le François. 1925. With 66 illustrations. Pp. 214. Fr.22.

FOR the student of nervous anatomy a book such as that of Prof. Villiger is certain to prove useful and practical, though its title rather belies its contents. Not only is the peripheral nervous system in the strict sense fully described, but there are also sections dealing with nerve roots and their distribution, muscles and their innervation and actions, the sympathetic nervous system, and the central connexions of both motor and sensory nerves; the author has also managed to incorporate a few paragraphs on the clinical aspect of lesions of the motor and sensory tracts. The French translation reads easily and clearly.

PHYSIOLOGY OF REPRODUCTION.

Reproduction in the Rabbit. By JOHN HAMMOND. Edinburgh: Oliver and Boyd. 1925. With 20 plates and 40 tables. Pp. 210. 15*s*.

ANIMALS multiply in a variety of ways—sexually, by parthenogenesis, polyembryony, or budding. Even more diverse in detail are the breeding methods of different mammals. Reproduction is, indeed, one of the best illustrations of the great truth that the constants—i.e., the laws—of biology are the ends rather than the means, the results rather than the mechanisms by which they are achieved. Our knowledge of the physiology of œstrus, ovulation, conception, pregnancy and the rest seems much less advanced than it ought to be, and this delay is to a large extent due to attempts to generalise from one or two examples. This is now obviously impossible and the facts have to be worked out for each species separately. Mr. Hammond has here put together the data he has accumulated during several years' work at the School of Agriculture at Cambridge, and Dr. F. H. A. Marshall contributes an introduction and a chapter on the formation of the corpus luteum. The result is an interesting and well-documented work in which the processes in the rabbit are described and compared with those known in other animals. It will also be technically useful to those engaged in breeding rabbits. Unfortunately, the illustrations are with few exceptions poor.

POPULAR HYGIENE.

The Fight against Infection. By G. E. F. STAMMERS, Lieut.-Colonel R.A.M.C. (ret.). London: Faber and Gwyer. 1925. With 24 text figures. Pp. 214. 2*s*. 6*d*.

NEVER were the general public so anxious to be healthy as they are now, and this excellent little book will help them to understand what infection by parasites is and how it may be dealt with. After a general account of germs and resistance, Colonel Stammers takes ankylostomiasis, malaria, plague, sleeping-sickness, and enteric diseases as more detailed examples, and interpolates an admirable discourse on the text that scientific discovery is a process and not an event. It is, we think, rather a mistake to describe so many diseases with which we are now quite unfamiliar. The temptation which the spectacular successes of tropical hygiene offers is difficult to resist, but it is apt to give some impression of unreality; the quieter triumphs of domestic health work are in the end, perhaps, more convincing. It is, of course, difficult to say exactly how infantile mortality has been reduced to about one half of what it used to be, but the lay public would appreciate from this homely example that the fight against infection is one in which everyone can take part in quite a real daily way.

A TEXT-BOOK OF GENERAL BACTERIOLOGY.

Eighth edition. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. London and Philadelphia: W. B. Saunders Company. 1925. Pp. 752. 25*s*.

THE eighth edition of this text-book has still left it of manageable size and pleasing appearance. The section upon anaerobes has been revised and the book brought up to date by the inclusion of recent work upon the bacteriophage, scarlet fever, tularæmia, &c. There is little to add to the praise given to the book in the reviews of former editions. It maintains its position as one of the best balanced and most scholarly of the current text-books upon bacteriology and has the additional charm of viewing the subject widely, not being slavishly devoted to the pathogenic micro-organisms to the exclusion of due consideration of other forms.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—In the issue for October a contrast is drawn by D. R. Wilson, after a visit to America, between the way in which investigations into industrial activity are being conducted in that country and at home. Much work is being done in both places, but in America there is less coördination of research, rather more laboratory experiments, and rather less observations under industrial conditions. On the other hand, coöperation between engineers, technicians, physiologists, and psychologists is closer in America, and employers and operatives combine more to support inquiries of common benefit to both. Persons interested in experiments with animals on dust inhalation will find a useful note by C. K. Drinker, P. Drinker, and K. R. Drinker. These workers point out that by adding 10 per cent. carbon dioxide dusty atmospheres breathing is increased, anp

comparatively short exposures result in a uniform and satisfactory distribution of dust particles in the pulmonary alveoli. By this means periods of exposure can be usefully shortened.—The chief article deals with the manufacture and repair of electric accumulators; it is contributed by C. W. Price and J. C. Bridge, two Home Office inspectors, who present the results of an intensive investigation of the industry in Great Britain. The industry, owing to demands for motor-cars and for wireless apparatus, has improved of late, with a great increase in cases of lead poisoning. They show how close is the incidence of cases to efficient exhaust ventilation for carrying away dust and fumes. For this purpose the various processes of casting the lead plates, of pasting them, of trimming and assembling them is described. The workroom conditions in which these processes are carried out are dealt with in detail, and recommendations are made for improving these conditions and so minimising the risk of lead poisoning and improving the general health of the workers. Arrangements for medical examination and accommodation for personal hygiene are considered. The result of this report led to the establishment of a new code of regulations, which came into force this year. The way in which this code strengthens the various safeguards is pointed out. This article is one of considerable importance.—November, 1925: A comparison of past diseases in university students coming from rural and urban districts is presented by W. P. Shepard and H. S. Diehl. Data were collected from 3478 males and about 1500 females. The common diseases in order of frequency were: measles, mumps, chicken-pox, whooping-cough, influenza, tonsillitis, scarlet fever, pneumonia, small-pox, and diphtheria. Students from rural communities were highest in past histories of pleurisy, pneumonia, rheumatism, small-pox, and tuberculosis; and lowest in chicken-pox, diphtheria, tonsillitis, typhoid fever, and whooping-cough. In contrast students from large cities were highest for chorea, and lowest for appendicitis, influenza, measles, mumps, pleurisy, and small-pox. The totals did not rise or fall regularly according to density of population. The areas were grouped into rural, villages, towns, small cities, and large cities, in order of population density. The totals for past history of infectious diseases came out: villages 317, small cities 296, towns 252, rural 232, and large cities 231. The present position of factory legislation in Australia is stated by D. G. Robertson. Each State in the Commonwealth has wide legislative powers and functions. Hence there is no one code prevailing throughout. The State of Victoria was the first to adopt legislation, which has been progressive and modelled upon the legislation of Great Britain. New South Wales, although an industrial State, followed later and has not progressed so far. Other States have legislation, but it is not extensive. There is need to-day for improvement and for the wider adoption of a uniform code. Action on these lines was taken at an industrial hygiene conference held in 1922, at which Dr. A. J. Lanza was present. Certain resolutions were then adopted as recommendations for consideration by the several States; these resolutions are given in detail. Since this conference, legislative advance has been made in Victoria and New South Wales, where medical inspectors of industrial hygiene have been appointed, and further powers to call for periodical medical examination have been taken in Western Australia.—The most important paper is one by M. S. Iszard, who recounts an investigation into the effect of calcium when inspired as a dust upon tuberculosis. Calcium hydrate was found not to be harmful to the lungs of rabbits, and to stimulate migration of macrophages containing silica particles. Inoculation with tubercle bacilli after a period of dust inhalation showed slight retardation in the development of tuberculous lesions. When lime dusting occurred after inoculation the retardation was more distinct. The investigation upon which these conclusions are based are carefully described and represent an extensive piece of useful, although somewhat negative, research.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group chiefly composed of counties and combined districts:—

Name of district.	Estimated mid-year population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with Influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Cambridgeshire (excluding Cambridge) ..	70,950	15·9	12·9	0·90	1·89	2·2	—	52	2·7
Cambridge B. ..	59,120	14·1	11·8	1·04	1·42	2·1	21	55	7·2
Heston and Isleworth U.D. ..	46,970	17·7	10·8	1·04	1·34	2·0	27	60	1·2
W. Gloucestershire C.D. ..	48,862	18·4	11·2	0·51	1·53	2·1	30	62	—
Herefordshire C.D.	50,371	18·7	13·6	0·76	1·67	2·6	24	52	3·2
Dumfries* ..	44,530	22·2	14·3	1·07	1·55	2·3	—	74	9·1
Isle of Ely ..	76,070	18·7	11·5	0·68	1·56	1·8	34	59	4·9
Stirling*	78,270	23·7	13·2	0·89	1·19	2·7	31	74	7·0
Dumbarton* ..	53,114	19·1	13·0	0·79	1·43	2·7	41	89	4·9

* Statistics of landward areas of county. B. = Borough. C.D. = Combined district. U.D. = Urban district. — = Figures not available.

Cambridgeshire.

Dr. Frank Robinson reports progress in the scheme for the provision of nurse-midwives in all the rural parishes of the county. The county council does not subsidise midwives directly but makes grants for the training and maintenance of midwives who will also act as sick nurses in the employment of the District Nursing Association and as infant life protection visitors for the Poor-law guardians. Of the 50 midwives now practising in the county only three are untrained, and of the 129 rural parishes there remain only 28 for which nurse-midwives have not been provided. Progress has also been made in the provision of pure water. In the Newmarket Rural District 103 water samples were analysed and 83 were found to be polluted; and in one parish out of 100 houses supplied by polluted wells 55 have been connected with the public water main. In other districts new wells have been sunk.

Cambridge.

Dr. Andrew J. Laird points out that the maternal mortality in Cambridge for the years 1919–22 was 2·39, as compared with 4·11 for England and Wales. Little use has been made so far of the arrangements for antenatal supervision, and Dr. Alice L. Robson suggests that the confidence of doctors and midwives can best be secured by the appointment of a specialist for this work. There is an arrangement for sending special antenatal cases to the out-patient department of Addenbrooke's Hospital; a fee of 10*s.* 6*d.* is charged for consultation and report and 2*s.* 6*d.* for each subsequent attendance. Arrangements have also been made with the same hospital for the admission of difficult cases of labour, normal confinement cases where the home conditions are prejudicial, and children under 5 suffering from ophthalmia neonatorum, epidemic diarrhœa, and non-infectious ailments. The charges made are 7*s.* per day for each adult (in addition to the surgeon's fee according to

the scale under the Midwives Act), and 5s. per day for each child. Mr. W. B. Grandison, the public dental officer, reports on the dental scheme for mothers and pre-school children. When a baby has cut four teeth it is enrolled in the scheme and the mother promises to bring it to the clinic at least every six months thereafter. If this arrangement were carried out, says Mr. Grandison, every child should enter school free from dental disease, but unhappily there are lapses from grace. During 1924 67 mothers were recommended for dental treatment and 47 availed themselves of it. "Dental work for expectant and nursing mothers is almost confined to the complete elimination of teeth and their replacement by artificial substitutes." The exceptions are those mothers who previously attended the school dental clinic. During 1924 150 houses were erected, all with State assistance; 68 of them were put up by the local authority and 82 by other persons. There are at present 1324 applicants for corporation houses and many of these have been waiting for years.

Heston and Isleworth Urban District.

Dr. Elwin H. Nash reports that at the end of the year there were 51 private wells in use for water-supply and that in nine of these an alternative supply existed for domestic purposes. In 63 instances taps were placed on the main in compliance with a notice from the health department, in substitution for taps on pipes connected with inaccessible and uncovered cisterns. This remedies a very common source of pollution of the pure water from the main. A small outbreak of mild small-pox is recorded, in which seven secondary cases were infected by a tramp. Dr. Nash describes recurrent outbreaks of diphtheria during 1923–24 in a residential school dealing mainly with Poor-law boys. At the end of 1924 the whole school was Schick-tested and the non-immunes immunised. Of the 50 members of the staff, 15 were Schick-positive. Of the 489 boys 63 were positive. Two of the nurses when immunised had severe reactions, and the third had a very bad arm and was ill for six weeks. In the opinion of Dr. R. A. O'Brien, of the Wellcome Laboratories, the symptoms in the nurses were due to protein sensitiveness. None of the children showed the slightest inconvenience. There were 33 notifications of encephalitis lethargica, which occurred in two small outbreaks in a small and populous area of Hounslow. The housing conditions in the district remain unsatisfactory. In his school report Dr. Nash draws attention to the large amount of futile work involved in treating ear discharges and would like to see ionisation made available in the district. He is also opposed to the routine removal of enlarged tonsils, as he finds that many disappear after a septic mouth has been cleaned up. Complete enucleation is, he considers, the only proper method.

West Gloucestershire (United District).

Surgeon-Captain O. W. Andrews reports that progress has been made in the building of new houses, and mentions that many people object to being obliged to supply fixed baths which they say may be used as potato stores. The small-pox epidemic in the East Dean district began in April, 1923, and the last case was notified in May, 1924. Of the other districts in the combination Gloucester Rural was the only one affected by small-pox. Altogether there were 311 cases in East Dean with two deaths, and 24 cases in Gloucester Rural with no deaths. Dr. G. F. Rigden finds that there is a slow awakening of the public to the importance of antenatal work, but that "we are still far from the day of routine antenatal examination."

Herefordshire Combined District.

Dr. Herbert Jones states that one-fourth of the cottage houses have a distant water-supply, making a proper standard of cleanliness difficult. It is a constant practice to complete the building of a cottage before ascertaining whether there is a suitable water-supply available. The duty thrown on the rural district councils of enforcing a proper water-supply is not satisfactorily carried out. Of 80 samples of water examined, 32 were reported unfit. In many parts of the district "dip" wells are the source of supply. These are readily polluted, but when they are situated on a slope they can easily be made safe by enclosing them and providing a pipe outlet to slightly lower ground. The slop drains from many cottages discharge into the roadside ditch, and this practice has even been permitted in newly erected houses. The routine inspection of houses was discontinued in 1914 and is still in abeyance owing to the increased cost of executing repairs. Dr. Jones considers that it should be resumed. He discusses the difficulty of providing water-supply and drainage in rural districts, and expresses the opinion that financial assistance from the State should be forthcoming towards the provision of rural water-supplies and sewage disposal works. Between 10,000 and 12,000 men, women, and children come into the combined district for about four weeks in August and September for the hop-picking. Their employers pay much greater regard to the welfare of pickers than formerly. The Bromyard and Ledbury Councils, however, have not yet adopted the by-laws drawn up for the accommodation of hop-pickers in other districts.

Dumfries.

Dr. J. Maxwell Ross states that the increase of occupied houses is due partly to building but also to reoccupation of empty houses. In the village of Kirkconnel there are 21 one-roomed houses still used, six of which are occupied by three persons, five by four persons, one by five, and four by six. The analysis of the samples of Esk water supplied to Gretna and Eastriggs showed that the chemical treatment adopted, though expensive, was effective. The need for using the Esk water ceased in November when the gravitation supply became available. The River Nitt has been surveyed from its rise in Ayrshire to its fall into the Solway, and a good deal of pollution was found in Dumfries-shire owing to coal-washing and various sewage effluents. At one school an arrangement was found by which water from a mill stream was diverted to a channel under the seat of the latrine, the fæcal matter being washed out through a pipe on to the banks of the stream. This is reminiscent of the methods adopted by the monks at Kirkstall Abbey and other monasteries. There is practically no industrial pollution of the River Annan, and the sewage effluents of Moffat and Lockerbie are fairly purified before they reach the main stream.

Isle of Ely.

Dr. J. Pixton Walker reports that the death-rate in illegitimate infants has gone down from 120 to 80, and goes on to state that "a detailed examination of dates of birth of first-born children has shown us whole villages where forced marriages must have been the rule rather than the exception." About 60 samples of milk are examined annually under the Food and Drugs Acts, and the analyst's report has shown curious results during the last three years. The average fat-content in 1922, 1923, and 1924 was 3·58 per cent., 3·65 per cent., and 3·78 per cent. respectively, whilst the average non-fatty solids for the same years was 8·74 per cent., 8·72 per cent., and 8·56 per cent. The county council does not subsidise the Isle of Ely County Nursing Association, which will "probably soon be disbanded for lack of interest and of funds." A handsome nurses' home, however, with a maternity ward, has been erected for the March District Nursing Association, and the chairman of the county council at the opening proceedings stated that the county council pay £3 per annum towards administration expenses for every nurse employed by nursing associations who performs duties for the county council.

Stirling.

Dr. T. Adam reports that the new coördinated scheme of medical and nursing services which has been in operation since the beginning of 1924 has worked very smoothly and has given every satisfaction. Consideration is given to the suggestion of the Board of Health that fever nurses should spend two years in training at a fever hospital and subsequently two years in a general hospital so as to qualify, after examination, for both the fever register and the general register. It is pointed out that for the purpose a unit area is needed which includes both types of hospital. The central district of the county forms such an area readily, and the probationer staff of the two fever hospitals could easily pass on to the Stirling Royal Infirmary to complete their training after two years at the fever hospitals. Dr. Adam cordially approves of the new proposals. No antenatal clinics have so far been established in the county. The pollution of the rivers of the county by paper mills is receiving considerable attention.

Dumbarton.

Dr. Thomas Lauder Thomson reports a considerable outbreak of scarlet fever in the western district with which the Dumbarton Joint Hospital was inadequate to cope. There were 515 cases notified, several of which were of a severe type, and there were nine deaths. In two cases the infection spread to dairy farms, but it did not appear that the epidemic was to any appreciable extent milk-borne. Dr. Thomson thinks that the curtailment of the supply of milk to expectant and nursing mothers has caused hardship, especially in districts where there is much unemployment. There is no maternity hospital in the county. Of the 22 midwives practising, 16 have only the "bona-fide" qualification. The institutional accommodation for the treatment of tuberculosis is unsatisfactory. The county council have no control of the institutions used, patients frequently have to wait a long time for admission, and it is almost impossible to find accommodation for non-pulmonary cases. Dr. Thomson advocates the provision of a tuberculosis institution by the committees of the eastern and western districts, either by themselves or jointly with other authorities. The beds required for Dumbarton would be about 30 for pulmonary cases and 15 for non-pulmonary cases. Several improvements in the tuberculosis scheme have been approved, but the question of the provision of the sanatorium, of more dispensaries, and of a bacteriological laboratory is to be further considered.

South-West Kent United Health Area.

Dr. S. Nicol Galbraith reports that the arrangements for the hop-pickers in Kent leave much to be desired. The bad weather of 1924 showed up the unsatisfactory nature of their dwellings. "The sanitation in some camps was deplorable; in some positively indecent." He recommends the appointment of a permanent inspector. Temporary inspectors have done some good, but the time to get defects put right is not during the hop-picking, but between the seasons. In addition to the danger from infections amongst the pickers, other diseases such as rheumatism, pneumonia, and bronchitis have to be considered. Twenty-two deaths were registered among the families of the pickers, including those of 17 children, nine of whom were under 1 year of age. The hoppers' dwellings at East Farleigh come in for special condemnation. As a contrast to the bad conditions, some farmers provide model dwellings and offer prizes to the pickers for the best kept homes. It is suggested that the temporary hut encampment used for soldiers at home and abroad during the war should be taken as the minimum standard. The hop-picking in Kent means the migration of about 60,000 people into South-West Kent, and it is obvious that their accommodation is a problem which demands very careful consideration both from the point of view of the health of the pickers and of the menace to the health of the permanent residents.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 21ST, 1925.

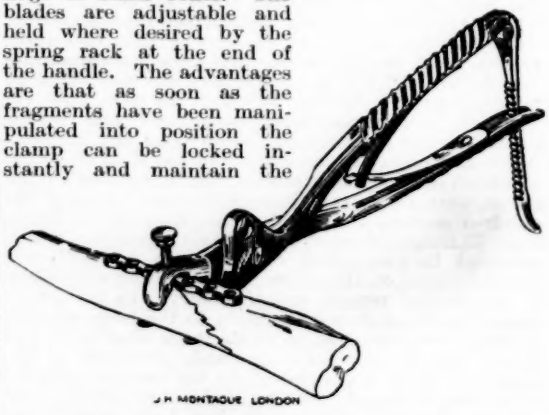
Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68; scarlet fever, 2464; diphtheria, 1031; enteric fever, 44; pneumonia, 1186 (as compared with 889 in the previous week); puerperal fever, 53; cerebro-spinal fever, 8; acute poliomyelitis, 11; encephalitis lethargica, 30; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 98. There were no cases of cholera, plague, or typhus notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 3 deaths from enteric fever (none in London), 49 from measles, 13 from scarlet fever, 30 from whooping-cough, 29 from diphtheria, and 61 from influenza. In London itself there were 8 deaths from diphtheria and 24 deaths of infants under 2 years of age from diarrhœa and enteritis.

New Inventions.

COMBINED BONE AND PLATE HOLDING FORCEPS.

I HAVE had in use for nearly two years a combined bone and plate holding forceps, which has given every satisfaction. It consists of two blades made on the principle of the well-known Peters forceps for large or small bones. The blades are adjustable and held where desired by the spring rack at the end of the handle. The advantages are that as soon as the fragments have been manipulated into position the clamp can be locked instantly and maintain the correct alignment while the bone is secured with the plate, which is slipped under the groove in the upper blade without disturbing the position of the fragments. The operation thus becomes much easier and shorter and no assistance is required, except to help in bringing the fragments into apposition.



The forceps was made for me by J. H. Montague, 69, New Bond-street, W. 1.

K. F. D. WATERS, M.B., B.Ch. Oxf.
St. Stephen's Hospital, Fulham-road, S.W.

LADIES' MEDICAL GOLFING SOCIETY. — Prize-winners for 1925 of the Open Bogey Competition in aid of the Royal Medical Benevolent Fund Guild are as follows: Best aggregate of five cards: (scratch), Miss I. Doxford, 16 down; (handicap), Class 1, Mrs. Atkins, 5 down; Class 2, Miss Magee, all square. Best single card: Class 1, Mrs. Hopkins, 6 up; Class 2, Mrs. Perry, 7 up. Best aggregate of two cards: (England) Miss E. Steel, 12 up; (Scotland) Mrs. Ritchie, 2 up. This competition was started in 1923 with the object of endowing a scholarship for the Royal Medical Benevolent Fund Guild. As this object has now been attained, the competition will be discontinued. The thanks of the committee are offered to all those players who have contributed to this successful conclusion.

THE LANCET.

LONDON: SATURDAY, DECEMBER 5, 1925.

MEDICINE AND MONOPOLY.

Sir DONALD MACALISTER'S presidential address to the General Medical Council[1] usefully re-published one elementary fact with which the medical profession is more familiar than is the lay public. Whatever else it may be, the medical profession is not a rigidly protected trade-union. There is a register of medical practitioners who, after certain years of prescribed training, have passed certain examinations and who may be said to have pledged themselves to maintain certain standards. In 1858, when the various branches of the profession were united under one governing body, Parliament created this system of registration because it was "expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." But, with the two exceptions of dentistry and midwifery, which Sir DONALD MACALISTER mentioned, there is no monopoly of practice in any of the healing services. We make no apology for elaborating this simple statement of the legal position. No woman may, habitually and for gain, attend women in childbirth (except, of course, under the direction of a qualified medical practitioner or in emergency) unless certified and enrolled under the Midwives Act; the prohibition is backed by a fine of £10. No person (save for certain obviously necessary exceptions) may practise dentistry, unless registered under the Dentists Act; the prohibition is backed by a fine of £100. But in creating the machinery of registration for medical practitioners Parliament has never said that no one is to give medical or surgical treatment unless his name is on the Register maintained by the General Medical Council. The registered medical practitioner has no more monopoly than the registered veterinary surgeon. Exclusion from the Medical Register is not exclusion from practice.

Hence in the present state of the law, as Sir DONALD MACALISTER reminded us, the man whose name is taken off the Register is as free to practise as if he had not been registered and the public is as free to employ him if they think fit. He escapes the jurisdiction of the Council and, if he has previously found difficulty in balancing himself upon the border-line of the recognised professional standards which the Council exists to maintain, he is happier if that feat is no longer required of him. There are, it is true, certain limited privileges which the unregistered practitioner does not enjoy. He cannot hold a medical appointment in the Army or Navy or in public institutions. He cannot give a medical certificate of illness, injury, or death; and he cannot prescribe a dangerous drug. If our countrymen think these restrictions are unfair to the unregistered, Parliament can abolish them. Meanwhile we can only repeat that, though a penalty awaits any unauthorised person who extracts a tooth or attends a woman in childbirth, nevertheless, in all other fields of medicine or surgery any person, whether registered or not, may perform any sort of operation upon the human body without liability, provided that his ministrations do not result in such untoward consequences as to give rise to a charge of culpable negligence. Even at this point, in the domain of civil and criminal liability for negligence, the law makes no difference whatever between the registered and the unregistered practitioner, the qualified and the unqualified. Probably judge and jury are more likely to find that treatment has been unskilful if administered by an unqualified person; to that extent a plaintiff brings his action against an unqualified person with better prospect of success than against qualified doctors and surgeons; but this bias, for what it is worth, arises from an inference of fact and not from a principle of law.

Let it not be said, then, that the medical profession is a jealously preserved trade-union. Do other professions have to tolerate like liberty of competition from unregistered practitioners? What opportunities of practice has the solicitor whose name is removed from the rolls of the Law Society? What right of audience has the barrister who is disbarred by the Inn which called him? There must be many members of the public who realise that more and not less protection is needed in the sphere of medicine and surgery. There must be many medical practitioners who, when they see their practice invaded by the unqualified, marvel more at the impotence of the General Medical Council than at the occasional exercise of its power of removal from the Register.

[1] THE LANCET, Nov. 28th p. 1133.

THE MUSCULAR DYSTROPHIES.

THE neurologist, perhaps more than any other specialist in the profession, is often called on to deal with diseased conditions not attributable to extrinsic morbid action but to intrinsic, possibly congenital, defect. Among the groups with which he is concerned none is at once more simple of recognition and more difficult of treatment than that of the muscular dystrophies. Clinical classification and description are doubtless essential as a step towards the problem of ætiology and of treatment, but in respect of this particular class of case they have not taken us very far. The essential clinical features of the majority of the dystrophies have been familiar for half a century, and although difference of opinion still exists as regards their interrelation we are not likely to reach any rational conception for treatment from clinical considerations alone. Nor, regrettably, can we rely with confidence solely on the observations of the histo-pathologist, for he handles dead material, muscular cicatrices from investigation of which it is well-nigh hopeless to expect the deduction of any data concerning incipient morbid action. The end-results of the myopathies and of the myelopathies, as far as the histological picture of the muscle substance is concerned, are for practical purposes not to be distinguished. Even when recourse is made to biopsy, microscopical examination reveals a pathological state but not a morbid process, while the interpretation of the actual tissue findings is not a little difficult.

It is not to be wondered at, therefore, that dissatisfaction with mere clinical description and with the limitations of morbid anatomy should lead the neurologist who has imaginative curiosity to tackle the problem of the muscular dystrophies from other viewpoints. Prof. EDWIN BRAMWELL, whose Bradshaw lecture on this subject appeared in our columns last week, is to be congratulated on breaking away from neurological commonplaces and on his ingenious and suggestive endeavour to find an ætiological basis for these myopathic degenerations in disorder of the

sympathetic and perhaps the neuroglandular systems. In brief outline of Prof. BRAMWELL'S position, we may say that he is impressed by the idea that the muscles likely to be affected in the muscular dystrophies are those especially associated with the function of fixation, and he also supposes, relying on the observations of BABINSKI and ONANOFF, that such muscles as develop early in the fœtus are especially predisposed to suffer myopathically; he takes the further view that those muscles which can be shown to have acquired their functions late or to have taken on new functions are likely to prove more resistant. Applying, in the next place, the dual innervation theory as elaborated in recent years by not a few workers, among whom the late Dr. IRVINE HUNTER holds a prominent position, the lecturer admits as an attractive speculation the possibility of muscular weakness and wasting being due to implication of the sympathetically innervated elements in muscle structure, and submits clinical instances which may be taken to indicate that, in some cases at least, disorders of the endocrine system coexist with muscular dystrophy, though he is inclined to attribute both of these to an (unknown) common cause, rather than to pronounce the latter secondary to the former.

Undoubtedly the clinical data calculated to prove of most suggestiveness in this difficult problem are those which can fairly be taken to indicate, if not to demonstrate, that other systems than the muscular are involved. For example, the vasomotor mottling of the limbs often seen in pseudohypertrophic muscular paralysis, the somatic infantilism of not a few cases of the same clinical variety, and, indeed, their occasional trait of relative mental infantilism, the frequent smallness of the bones, and other points to which allusion might be made, all serve justifiably to make the clinician think of the interjection of a neural or neuroglandular factor in the dystrophic conditions usually held in these days to be intrinsically muscular in origin. An explanation of such phenomena must be sought. Insufficient attention has hitherto been directed by the neuropathologist investigating the morbid anatomy of the dystrophies to the state of the cells of the intermediolateral tract in the spinal cord, the central connexion of the sympathetic system, and when a cord is reported to be normal in a dystrophic case we may legitimately ask whether that tract has been specially studied. Even so, however, we do not feel that Prof. BRAMWELL is on firm ground when he leaves the non-muscular clinical symptoms above alluded to, to apply a questionable hypothesis to a somewhat doubtful clinical distinction. Is it, as a fact, the case that the muscles prone to degeneration are those especially connected with the function of fixation? What is fixation? SHERRINGTON has shown us that the distinction between reflexes of posture and reflexes of movement is not clear-cut; we know that posture is often maintained voluntarily, and that movement is in reality a series of changes of posture. At one time a muscle may be employed kinetically and at another posturally. Prof. BARD, of Geneva, has in recent communications strongly urged the prima facie improbability of two separate mechanisms for fixation and for movement respectively; both on clinical and on physiological grounds the separation is more than a little doubtful. We wish Prof. BRAMWELL had referred to the implication of the facial musculature in myopathy; the remarkable selectivity, in the Landouzy-Dejerine type, of the circumoral and circumocular groups does not suggest any incidence on "fixation muscles." The specific difference, further, between the "myopathic smile" and the "myasthenic smile," scarcely supports a neuroglandular origin for the former disease if we accept it for the latter; or, alternatively, if it has its place in both conditions it will not by itself explain the clinical differences. The conclusion also drawn by the lecturer, that muscles with new or more recently acquired functions are relatively resistant, seems to run contrary to the general rule of involution as applicable to many other neural diseases with which the physician is familiar.

But the valuable service rendered by Prof. BRAMWELL in his Bradshaw lecture consists less in the sketching of hypotheses which are open to some criticism and for which a speculative rather than a definitely established basis is offered, since he himself admits with candour that speculation has its limitations; it resides rather in the courageous step he has taken of crystallising dissatisfaction with current views that describe but do not explain, and of applying to a large group of more or less intractable cases an analytical study on fresh lines which is bound to result in advance. His references to biochemical studies of the muscular dystrophies are comparatively few, although he has clearly envisaged the possibilities of progress in that direction; the now rather older work of Dr. E. I. SPRIGGS has been to some extent lost sight of, but the field is largely uncultivated and will repay any labour that is spent on it.

RESEARCH IN SCHOOL MEDICINE.

WE have already dealt [1] with the general features of Sir GEORGE NEWMAN'S recent report on the work of the school medical service during 1924. This report, like its predecessor, is no mere compilation of statistical facts and figures. Its pages present us with a living picture of the various branches of that work, its objects, its methods, its obstacles, its achievements, and even its deficiencies, and the whole is infused with a true spirit of idealism, modified only by such economical considerations in administration and organisation as the times make necessary. Throughout, the great aims of the service—prevention of disease, prevention of effects in adult life of disease in childhood, and the promotion of positive health—are kept steadily in view, and, as we read the report, we realise that its success in achieving these objects depends not only upon medical measures, but is intimately bound up with the solution of many social and educational problems. In some degree it is true to say that the school doctor discovers conditions whose causation it is beyond his powers to remove or to alleviate. Disease is found in the school-child which began in pre-school days, or if it only appears at the school age, owes its origin to hereditary causes and environmental conditions that have existed since infancy. Poverty, low wages, large families, bad housing, unsuitable and improperly cooked food, all play their part before the child enters school, and continue to do so during school life, and the persistence of these causes accounts for Sir GEORGE NEWMAN'S statement that "the number of sick children at the commencement of school life is as large as ever." In matters of dietary, insanitary school accommodation, and hygienic living conditions generally the school doctor can be active as an educationist, instructing either personally or through qualified teachers, the child, the teacher, the parent, and the education committees to whom he is responsible. It is a melancholy fact that too many of our elementary schools are still models of what a school ought not

[1] THE LANCET, Nov. 21st, p. 1077.

to be, and that the hygiene teacher may have to give his lessons in buildings which violate in almost every possible way the principle he is trying to inculcate. To some extent the same is true of school meals. There is great scope for educative work here, and the report shows that it is not being neglected.

One of the most interesting sections of the report is that dealing with research work. Ever since the inauguration of the school medical service, individual officers have in such time as they could spare from routine work carried out investigations on special lines, and this report describes some of the more important of these in 1924. The subjects discussed include Rheumatic Infection in Childhood, Goitre, Prevention of Defective Vision Resulting from Squint, Epidemic Encephalitis, Methods of Measuring Fitness, Effects of Infantile Ailments upon Teeth. Obviously, the efficiency and accuracy of result of such work is limited by the fact that the medical officer is only dealing with conditions in his own area, and would be greatly increased if the research was extended to include many areas with differing types of school population. The Board has now instituted a scheme for coördinated research to make this possible, and already four extensive investigations are definitely in being on Enlarged Tonsils and Adenoids, Causes of Defective Vision, Determination of Anthropometric Norms, and Mental Deficiency. For each subject a committee has been formed, consisting of medical officers of the Board, school medical officers, and other experts on the subject, and this committee draws up a schedule of investigation for the use of the medical officers who are asked to take part in it. The methods as described are very comprehensive and include the study of "control" cases. It is proposed, for example, in studying tonsils and adenoids, to inquire minutely into their origin and their earliest symptoms and signs, and also to carry out a following-up investigation over a period of years of cases detected, whether treated or untreated.

It is to be hoped that local authorities will pay heed to Sir GEORGE NEWMAN'S remarks on the importance of research work. As he remarks, "Every year to examine the bodies of a million children without thinking, without building new knowledge, would be a species of mechanical labour, the essential value of which would be lost." The school medical service has an unrivalled amount of material to its hand for purposes of research, and while the routine duties of inspection and treatment of the individual child must not be neglected, local authorities will do well to cultivate the larger vision, and give opportunity to their staffs to partake in such work as is likely to be of benefit to the child of the future.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The forty-sixth meeting of the Commission was held at the Home Office, Whitehall, on Nov. 26th, Sir Arthur Worley, and later Lord Lawrence of Kingsgate, in the chair. Evidence was heard from the National Confederation of Employers' Organisations (represented by Mr. J. B. Forbes Watson and Mr. John A Gregorson) on the financial aspects of the health insurance scheme. The Confederation submitted that the present need for relief to industry so as to stimulate employment was so urgent as to warrant a reduction in the weekly contributions of the employers and workers; that the present scheme is over-financed; and that the progressive expenditure on additional benefits is more than this country can afford and more than can be justified on any international comparison. Thereafter, the Commission sat in private to continue their review of the evidence which has been received since they began their work and to consider the questions arising therefrom. Proof copies of the oral evidence and the relative statements submitted at the meetings of Oct. 22nd, 23rd, and 29th, and Nov. 5th (the forty-first, forty-second, forty-third, and forty-fourth days) are now on sale at H.M. Stationery Office, price respectively 1*s.* 6*d.*, 2*s.* 3*d.*, 2*s.* 3*d.*, and 1*s.* 6*d.*

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1924.

THE first part of the Registrar-General's Statistical Review,[1] which has just been issued, contains tabular matter only, the explanatory medico-statistical comments being reserved for future publication. Certain items of medical interest may, however, be culled by those trained in the use of figures. The decline in the rate of infant mortality during the present century remains the outstanding feature of our vital statistics; a reduction from 139 deaths of infants per 1000 deaths in the lowest quinquennial record of last century to 90 in 1916–20 and to 75 in 1924 meaning an improvement phenomenal in extent. It is customary to regard the improvement in infant mortality as limited almost exclusively to the last nine months of infancy, and as being unshared by infant life in the first month after birth. This point cannot be checked historically from the tables in this report, which deals almost solely with the year 1924; but it can be tested geographically from the summarised tables as are given on p. 48. Thus in the aggregate experience of all county boroughs infant mortality at ages under 4 weeks was 31 per cent. higher than it was in the metropolis, and in the aggregate experience of all rural districts was 19 per cent. higher than it was in London. These are average results; and the experience of individual districts in and out of the metropolis separately stated on p. 59 shows much wider ranges of difference. Even the average figures, however, demonstrate how large a part of so-called neonatal mortality is preventable and is being prevented in some parts and not in other parts of the country. The statistics of maternal mortality from childbirth form a further subject of great medical interest. So far as the whole country is concerned, the only historical comparison year by year given in this review is based on the use of rates per million females living. Thus stated, the reduction of mortality from puerperal sepsis from 72 in 1914 to 50 in 1924 requires checking by rates based on the number of births in connexion with which the sepsis occurred. If any importance can be attached to notifications of puerperal fever, there has been no decline in this period. More utilisable evidence is derived from the comparison of total childbirth mortality and mortality from puerperal sepsis given in the review for 1923 and 1924, and correctly stated per 1000 births. The largest ranges of total puerperal mortality for 1924 are from 8·85 in the Isle of Wight, 5·12 in Merionethshire, and 5·01 in Montgomeryshire, to 1·43 in Kesteven and in Northamptonshire, 1·50 in Middlesex, and 1·84 in London. In county boroughs total puerperal mortality ranged from 0·97 in West Ham, 1·14 in Oxford, 1·23 in Huddersfield, 1·30 in Northampton, and 1·30 in Tynemouth, to 4·55 in Blackburn and 5·36 in Bolton. In some of these towns the rates are based on a relatively small experience; but even when this is remembered, there can be no reasonable doubt that the standard of medical and midwifery attendance on women in childbirth is lamentably lower in some areas than in others.

From the point of view of ready comparisons for long periods Table 6 on p. 35 is the most valuable. Typhoid and typhus fever have disappeared from this table, and their place has been taken by tuberculosis; the addition is more welcome than the omission. A second page of long-period comparisons for individual diseases would enhance the value of the review. Perhaps the most impressive items in the existing table are the decreasing toll of measles and whooping-cough on child life. It would certainly appear that these diseases, as causes of death, are

[1] Registrar-General's Statistical Review of England and Wales, 1924. Tables. Part I.: Medical. 15*s.*

being more nearly controlled than in the past; and this appears to be so, even when the possibility of disease cycles of varying virulence is kept in mind. Medical officers of health will regret the belated issue of the sickness notification statistics in this volume instead of in a separate volume, issued not later than April, as was formerly the case. The chief value of these sickness figures lies in the possibility of early comparison between different parts of the country, and the 11 months required to ensure accuracy and completeness in the death returns is a long time to wait.

SEX GLANDS AND ENDOCRINE FUNCTION.

SIX lectures given at the Serotherapeutic Institute of Milan have just been reprinted in book form.[1] The course was designed to elucidate the following problems: Whether there is in the sexual glands an endocrine as well as a generative function; whether it is possible, by transplanting the glands, to utilise their hormones; and whether it is possible to isolate from these glands an active substance like adrenalin or insulin. The subject-matter of these lectures may be briefly set out thus:—

1. *The Sexual Characters, their Cause and Biology.*—Prof. C. Champy, of the Faculty of Medicine of Paris, describes his experiments on salamanders (*Triton alpestris*), in which by starvation (alimentary castration) a sexual inversion is produced. In birds, if a functioning left ovary is excised, the right gland becomes transformed into a testicle and secondary male characteristics appear. He further shows that, while the testicle secretes an exciting hormone which influences the development of the comb in the cock, the horns in the ram, the beard in man, and the thumb gland in the frog, there is also an inhibitory substance in the ovary, a "kalone," which prevents the growth of a comb in the hen. He emphasises the law of "all or nothing." Partial castration shows that there is no direct proportion between the mass of the genital gland and the action of the hormone. This law, as also the existence of an ovarian kalone, shows the necessity of reserve in interpreting the negative experiments of castration in invertebrates in which it can never be certain that some small residuum of the genital gland is left. Hence the hormone acts as a catalyser, the kalone as an inhibitor.

2. *The Laws of Action of Internal Secretions.*—Prof. E. Gley, of the College of France, also describes experiments on cocks to ascertain the relation between the volume of the testicle and length of the comb. He found that the animal with large testicles had a no more perfect comb than one in which a mere nodule remained. He consequently disbelieves in hypo- or hyper-function of the endocrine glands. A given secretion, however, may really be a complex of various products. The substance which determines sexual characters may not be the same as that which presides over the development of the cock's comb, and the thyroid substance which acts on the psyche, may not be identical with the substance which regulates the skeleton. If a given internal secretion is composed not of a single but of several products, and if one of these should be wanting either temporarily or permanently, a dissociation of morphological and functional phenomena would ensue. Cases of partial myxœdema are satisfactorily explained on this hypothesis. Another law of great physiological interest is that of "functional constancy," as shown in the retrogression of sexual characteristics in castrated cocks, characters which can be preserved by the injection of testicular extract at regular intervals.

3. *The Anatomical Basis of Ovarian Correlations.*—Prof. A. C. Bruni, of the Veterinary Institute at Milan, works out the thesis that the production of a morphogenetic hormone capable of stimulating the development of certain characteristics and preventing that of others cannot be ascribed to one part of the ovary rather than to another, but to the whole organ. The thecal and interstitial cells, besides being deposits of nutrient material, are an intermediary between the germinal elements and the somatic. The ovary on this hypothesis would act like other endocrine organs pouring into the blood useful products and abstracting harmful ones.

4. *Correlation between the Psychic System and the Sexual Glands.*—Prof. E. Lugaro, of the University of Turin, gives an interesting summary of the psycho-sexual development of the child, calling attention to pre-puberty misogyny which, in his opinion, is not a "repression" but a temporary redundance of sensuality through virile psychic tendencies. The effect of early castration is a certain degree of infantilism, but no deviation towards femininity. Genius is not a pure sexual characteristic. Discussing dementia præcox, Prof. Lugaro thinks that Mott's researches point to a phase of exhaustion of glandular activity that happens in these patients when, after a period of extraordinary exaltation, the sexual function ceases for ever, nor does he agree with Freud that the delirium, hallucinations, and sexual images are due to a psychogenic mechanism. He attributes mental disturbances at the menopause to thyroid and not ovarian influences, and hyperæsthesia sexualis to other causes than the sexual glands. As to sexual perversion, he thinks the sexual glands only play a part through the generic factor of precocious and exaggerated erotism.

5. *Old Age, and Rejuvenation by Grafting.*—S. Voronoff, of the Laboratory of Experimental Surgery in the College of France, discusses the cause of old age. Unicellular animals reproduce by fission, old age and death do not occur. Higher up in the scale the somatic cells have definitely lost the aptitude of reproducing the complete organism, but can only reproduce parts as in hydra and lumbricus. In the vertebrates even the power of reproducing parts is lost and it remains for the sexual cells to reproduce the species. Old age is due to hardening of the tissues and organs by fibrous material by which the quantity of functioning cells is diminished. The endocrine glands through their hormones act on the nutritive metabolism, on the evolution of the cells, and on their morphology—if they cease to function life becomes impossible. Observations on castrated animals show that testicular hormone directly influences morphological change in all parts of the body, as much of the brain cells as of the epidermis, bones, and other tissues. Such animals when not slaughtered do not live as long as others. Eunuchs become old at 60 and do not live long. Opotherapy only offers a slight palliative to insufficiency or suppression of endocrine glands. Hence the importance of grafting. Prof. Voronoff describes his experiments with grafting testicles on old rams and bulls which recovered not only sexual power, but all the other qualities of young animals. He shows photographic representations of several men, bulls, and rams before and after testicle grafting, claiming that the internal secretion of a young testicle in an old organism activates the multiplication of cells and their metabolism from which results a true rejuvenescence of the body. He claims that the beneficial results of these graftings both in animals and men lasted several years. The photographs are without doubt very striking.

6. *Reactivation of Physical and Mental Force.*—Max Thorek, chief surgeon at the American Hospital in Chicago, deduces from his experiments that the seminiferous and Sertoli cells play no part in the production of libido, sexual power, or sexual characters in the male, but that only the interstitial cells of Leydig have this power. He arrives at this conclusion from the grafting of testicles previously "interstitialised" by X rays. He describes his technique, the peculiarity of which consists in "fenestrating" the tunica albuginea with the actual cautery. He gives a table of the results of 143 cases—in 63 per cent. there was return to a normal condition, while 22 per cent. were unsuccessful. The cases included senility, dementia præcox, neurasthenia, and hypogenitalism. He protests against the prominence given to restoration of sexual function; what is aimed at is the general reactivation of physical and mental force.

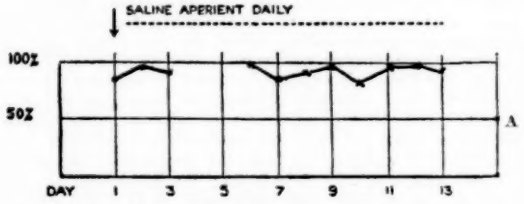
These six lectures, written by men who may be considered masters in their special subject, are worthy of careful study. It is to be regretted that they have not as yet been translated into English so as to increase the number of their readers.

[1] La Funzione Endocrina delle Ghiandole Sessuali. Milan: Istituto Sieroterapico. 1925. Pp. 243. Lire 25.

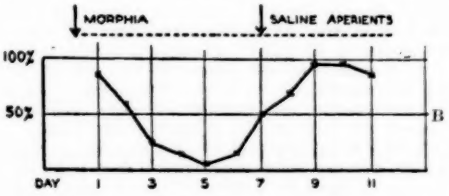
BACTERIAL CONTENT OF FÆCES.

IT has long been recognised that living streptococci are practically always present in the fæces of healthy persons. Considerable doubt, however, exists as to the importance that should be attached to variations in the number of colonies of these organisms obtained on plate culture. There are those to whom their occurrence in numbers even remotely approaching those of the coliforms justifies the attribution of pathological activity and the exhibition of a vaccine. Variations in the bacillary forms occurring in the fæces have come in for a good deal of investigation, particularly in America. The influence of diet in this respect is now well recognised, the standard example being the passage from the infantile to the adult type of flora consequent upon the passage from a milk to a mixed diet. That the reverse change from a mixed to a milk diet may in the adult bring about a return to the infantile type of flora has not been so widely recognised, and instances are not wanting in which

organisms appearing in the fæces as a result of the ingestion of a diet adopted for the treatment of a disease have been accredited with the causation of the condition. Even more slowly has knowledge accumulated as to the factors governing the streptococcal population of the fæces. This question has lately been investigated by Dr. A. P. Garrod [1] at St. Bartholomew's Hospital with interesting results. Dr. Garrod has been able to demonstrate quite clearly the importance of at least two factors determining the length of survival of streptococci in the fæces. One of these is diet. On a diet rich in carbohydrate streptococci appear in far greater numbers in the fæces than they do on one consisting mostly of proteins. This was well shown by the investigation of the fæces of patients on a modified Allen diet, who showed only 3·3 per cent. of streptococcal colonies on culture as compared with 40 per cent. in individuals on an ordinary diet. In this



A. Normal individual: Percentage of streptococci in fæces.



B. Ditto: Showing effect of constipation.

connexion Dr. Garrod found that whereas streptococci preponderated in the fæces of the horse they were almost absent from those of the lion. A factor even more potent in modifying the number of living streptococci in the fæces is the rate of passage of the intestinal contents through the gut. The more rapid the passage towards the rectum the greater the number of living streptococci appearing in the fæces. This point is illustrated in the accompanying graphs showing the effects respectively of a course of aperients and a course of morphia upon the streptococcal population of the fæces.

DOSAGE IN ULTRA-VIOLET THERAPY.

THERE is no less need for a practical method of measuring the doses of radiation used in ultra-violet therapy than in X ray or radium therapy. While nothing is easier than to specify theoretical units, so dear to the heart of the physicist, it is quite another thing with practical units. An illustration of this is the fact that if international agreement on the question of practical X ray units for medical purposes is reached next year, as it probably will be, it is only after 25 years of use of X rays in treatment. In the early days of light therapy, when Finsen was establishing its utility, quantitative methods, apart from the specification of the power consumed by the lamps, were not usual. At present there is a widespread use of open arcs with carbon or tungsten electrodes and of enclosed arcs of which only the mercury vapour type has any considerable vogue. With an open arc of a given type carrying a certain current at a given voltage there may not be much room for big variations in output of radiation during the running of a lamp, but with the mercury-vapour lamp there are two phenomena which preclude a uniformity of output. It has been shown by B. D. Watters that very soon after a mercury-vapour lamp is started the output of radiation diminishes and then increases to a steady level. The degree to which this happens depends on the power applied to the lamp, and the time taken to reach a steady condition may be as long as 15 minutes. The second phenomenon is the increasing opacity of the quartz container in the course of time. If, then, for no other reasons, it will be seen that, in order to know anything definite about the output of radiation from the mercury-vapour lamps, we must measure the radiation emitted by it and not only the power supplied to it.

But the need for some practical method of measurement for both open and closed arcs comes still closer home to clinical investigators who wish to compare their results with those of others in a strictly quantitative way. For practical purposes the method of measuring dosage should be rigid and yet easily practised, while the instrument itself should be portable, robust, and not too costly. The instrument described on p. 1205 by Mr. H. D. Griffith and Dr. J. S. Taylor consists of a cadmium photo-electric cell coupled up with a direct reading electroscope. When the rays from either of the sources mentioned fall upon the cadmium surface, electrons are liberated from the cadmium in quantity proportional to the intensity of the incident rays, and the emission of these electrons is indicated by a movement of the gold leaf of the electroscope. It appears from the description that the instrument fulfils a number of the requirements just mentioned, and it will be interesting to have the experiences of others when the instrument is in general use. The authors, wisely we think, refrain from claiming that the instrument is especially sensitive to that part of the radiation of greatest therapeutic efficiency. As a matter of fact, such terms require much qualifying before they can be scientifically used. Luminous and ultra-violet rays are now used for a very large variety of diseases, and whereas one complaint may benefit from radiation selected from one part of the spectrum, another may be more effectively treated by a different selection. It is not yet certain whether it is beneficial to apply heat radiation simultaneously with rays of low heat equivalent or whether the claim for the antagonistic action of different wave-lengths is substantiated in full. There is room for much investigation in this most promising field of radiotherapy, and it will be helped by methods which are, at any rate, quantitative in aim.

THE DIAGNOSIS OF DYSENTERY THROUGH THE MICROSCOPE.

A CONCISE, informative, and well-illustrated article of some 37 pages, recently published,[1] sets forth the pathology, gross and minute, of bacillary and protozoal dysentery. The method of cytodiagnosis, originally described by Willmore and Shearman,[2] forms the basis of the paper and has been elaborated so as to enable a rapid diagnosis of bacillary dysentery to be made from a microscopical examination of the discharges from the bowel. Should cultural methods of isolating the dysentery bacillus be solely relied upon, in a very high proportion of cases the information will be misleading. In presenting the subject in a manner which can be understood and practised by physicians and laboratory workers in countries where the two main forms of dysentery are rife, this paper has great practical value. The object throughout the paper is to correlate the pathological changes in the bowel wall with the nature and appearance of the cells which

[1] St. Bartholomew's Hospital Reports, vol. lviii. London: John Murray. 1925. Pp. 53.

[1] Dysentery: Its Diagnosis and Management Through the Microscope. By Frank G. Haughwout, Protozoölogist and Chief, Section of Parasitology, Bureau of Science, Manila, P.I., and George R. Callender, Major Med. Corps, U.S.A., Curator, U.S. Army Medical Museum, Washington, D.C. International Clinics. Vol. II., Series 35. 1925.

[2] THE LANCET, 1918, ii., 200.

appear in the fæcal exudate. Many of the cells, notably the macrophages or clasmatocytes, seen in the fæces of bacillary dysentery closely resemble, to the uninitiated, stages in the life-cycle of *Entamœba histolytica*, and it naturally follows that a great deal of unnecessary confusion has risen with regard to the differential diagnosis, so important from the point of view of treatment, between these two conditions. A close study of the points of differentiation in the cell picture, as set forth in this paper, should dispel any doubts forthwith. A clear account of this subject was badly needed. The microphotographs of the cells which illustrate this article are striking and convincing. The section on treatment, which runs on familiar lines, is admirably handled.

RESPIRATION IN ANÆSTHESIA.

THE Dental Board are conferring a benefit by their series of post-graduate lectures on General Anæsthesia, and the benefit will be a great one if the other lectures maintain the standard set up by Prof. Yandell Henderson, who started the series in London, Manchester, and Edinburgh. His subject was control of respiration in anæsthesia by inhalation of CO_2. The lecturer showed how by scientific employment of carbon dioxide as a respiratory stimulant safe and rapid induction of anæsthesia can be assured, and also rapid elimination of the anæsthetic drug with consequent diminution of after-effects, particularly those attributable to so-called acidosis. The practical anæsthetist will naturally not see eye to eye with all the statements of one whose observations are mainly conducted in the laboratory, and the general picture of an open administration drawn by Prof. Henderson is fortunately a caricature of the usual clinical induction. Nevertheless, the lecturer's deductions from his laboratory work and from the phenomena which are sometimes witnessed in the anæsthetising room are sound, and the lines which he lays down for conduct are of value and full of suggestion for the practising anæsthetist. Naturally the latter will have to adapt his doctrine to the circumstances of reality. For example, the principles advocated and demonstrated by Prof. Henderson can only be carried out with apparatus which involves the use of a closely applied face-piece. In practice there are many individuals for whom the one horror of anæsthesia is any device of this sort. These people are not merely fussy or neurotic. Either retching or an intolerable sense of suffocation attacks them when a face-piece is closely applied, and their peculiar disability has to be met of course by some gradual form of administration. These people are not amenable to the lecturer's first rule of good anæsthesia, which is, he states, rapid induction. The second is uniform concentration of vapour, and the third rapid termination. The most important lesson which he enforced, and with which every anæsthetist will agree, is that control of the breathing is the most essential of all factors in securing successful anæsthesia. Respiration, moreover, it was pointed out, should not be regarded merely in terms of rate of breathing. Pulmonary ventilation is what really matters, and the depth of the breathing is therefore as vital as the rate. It is the volume of air breathed per minute that is the important quantity. In this connexion Prof. Henderson dwelt on the great work done by Prof. J. S. Haldane, who has explained the significance and relations of the volume of air breathed. Carbon dioxide, he showed, is the normal stimulant and regulator of breathing. The supply of oxygen has relatively little influence on respiration, and the administration of this gas alone never acts as a respiratory stimulant. This stimulating effect of carbon dioxide on the respiratory centre is put to practical use in the methods recommended by Prof. Henderson for securing rapid induction of anæsthesia. Another factor of the method is that the ether used is fully vaporised before it is administered. Rebreathing is employed because more uniform concentration of the vapour can be thus attained than in any other way. The condition of surgical anæsthesia depends on nothing else but the concentration of the anæsthetic in the central nervous system. The degree of saturation of the rest of the body has no direct influence on anæsthesia. The concentration of ether in the brain is immediately determined by that in the lungs and in the blood. The anæsthetic tension of ether in the blood is 3·7 to 4 per cent. of an atmosphere, which comes to about 1·2 g. of ether per litre of blood. The anæsthetic concentration is probably the same for everyone, even the most alcoholic. The reactions prior to anæsthesia are the real variables as between different patients, not the concentration at the point of full anæsthesia. The practical problem, then, is how ether can be volatilised and the vapour passed into the lungs rapidly enough to raise the concentration in the arterial blood immediately to the full anæsthetic amount. This could only be achieved with normal breathing if the concentration of the ether vapour inhaled were extremely high. This method has indeed been employed, but is undesirable for one reason, because of the irritating effect on the lungs of these highly concentrated vapours. The problem resolves itself into this: how can 6 or 8 g. a minute of ether be introduced into the pulmonary blood, or how can 9 or 12 g. of ether per minute be introduced as vapour into the inspired air without increasing the concentration of ether in this air to more than about 5 or 6 per cent.? Obviously to introduce a large amount at a low concentration only one way is possible—by a large volume of breathing. This is achieved by stimulating respiration, by means of carbon dioxide, up to several times the ordinary resting volume, and then running in a sufficient concentration of fully vaporised ether to produce the concentration of ether in the blood necessary for full anæsthesia. Prof. Henderson pointed out also the value of carbon dioxide administration in cases of alcoholic poisoning, of drowning, and during the recovery period of anæsthesia. He claims it for an absolutely demonstrated fact that inhalation of air or oxygen to which a considerable percentage of carbon dioxide has been added is of very great benefit alike after a prolonged anæsthesia and after asphyxiation.

THE HOSPITAL SAVING ASSOCIATION.

IT cannot often have happened that any novel organisation, whatever its purpose, has progressed with the rapidity of the Hospital Saving Association which held its third annual meeting last week. The figures of its growth are, indeed, remarkable. In July, 1923, it had 15,000 members; by January, 1924, the numbers had grown to 25,000; by January of the present year they had swollen to 101,000; July saw 160,000, and there are now more than 200,000. A year ago the income of the Association was under £40,000; it is now £120,000. These figures go far to justify Lord Hambleden's forecast at last week's meeting that the membership will in time reach a million. The material for expansion is almost unlimited. Persons whose incomes are within "hospital limits" increase yearly in number, and there are, no doubt, still eligible many who have not yet joined the Association. For 3*d.* a week, some portion of which is often paid by the employer—the London Midland and Scottish Railway Company, for instance, contribute one-third—a man may ensure hospital treatment for himself and his family without loss of self-respect and with complete freedom from almoner's inquiries into means. Where so much can be obtained for so little it is not surprising that the movement should have achieved such rapid and substantial success. Nor are the benefits one-sided. Like the quality of mercy, these small payments are twice blessed, for if they give a remarkably cheap insurance on the one hand, on the other they provide the hospitals with large sums which they would otherwise almost entirely lack. During the past year the hospitals have received £65,000 from these

weekly pence, a substantial proportion of which has been paid for extra benefits. Thus, while the contributor learns a little lesson in thrift he is rewarded with the best and fullest treatment that the modern hospital can provide. The fear that these easy terms would attract to the hospitals, to the detriment of the general practitioner, cases which would otherwise not have been treated there has been falsified, and may apparently now be dismissed. Mr. E. W. Morris's optimistic statement that the Association has "saved the hospitals" is, perhaps, a trifle premature, but it is well on its way to the achievement of the object for which it was created. This and other forms of contributory schemes are not only placing hospitals generally on a sound financial basis, helping to make possible the inevitable and costly developments of the near future, and giving the quietus to hasty talk about State interference, but inculcating valuable lessons of thrift, self-help, and independence among the mass of the people.

THE COLLEGE OF SURGEONS AND ITS MEMBERS.

THE Council of the Royal College of Surgeons of England is again considering the claim of Members of the College to representation on its Council. A few days ago the Council received a small delegation introduced by Dr. Redmond Roche, President of the Society of Members, who set out the story of the long unrequited desire of the Members to have a share in the government of a corporation in which they were numerically so preponderant. Ever since the charter of 1843 which instituted "a new class of Members who were to be called Fellows," on whom devolved the government of the College, there has been almost continuous protest by the remainder against this exclusion. In 1887 the Association of Members presented to the Privy Council a petition signed by 4660 Members, believed to be half the number which could then be reached by post, and in 1896 a half-yearly meeting of Fellows of the College passed a resolution admitting the desirability of giving Members direct representation on the Council. At every annual meeting for the last 31 years the Society of Members has urged this concession upon the President, and at the recent meeting, which we briefly reported, a motion to that effect was moved by Dr. L. Haden Guest, M.P., and seconded by Mr. F. Lawson Dodd, L.D.S., both Members of the College, in speeches which dealt with broad principles of democratic government. Dr. Guest spoke of the vast new store of knowledge and capacity available to the College which might be opened up by linking the general body of Members with the work of the institution, and Mr. Dodd spoke of the greater authority, the wider sanction, and the greater influence in the eyes of the public which the College would gain thereby. It was, he thought, refreshing in these days to have children coming forward and wanting closer union with their parents. No criticism was made by the Members' representatives of the conduct of the Council as at present elected and administered by Fellows of the College, for the charter of 1843, which excluded a large class from governing, removed the existing abuses of government. The number of the Council was then increased to 24, of whom three should retire annually, the choice of examiners was no longer restricted to councillors themselves, and any councillor became eligible for presidency or vice-presidency. The Council of the College as so constituted now carries out a triple function of developing the Hunterian Museum, of maintaining a valuable library, and of examining candidates in surgery. Other functions are less well defined. Section XV. of the College by-laws states that the Council will at all times protect and defend its Fellows and Members who may be disturbed in the exercise and enjoyment of their rights; and Section XIV., relating to the admission of Members, includes a declaration by them to obey every lawful summons issued by the Council and to maintain the dignity and welfare of the College. It may be that with the growth of wider professional associations and the institution of a disciplinary medical council the medico-political work of the College of Surgeons was likely to be dropped. In any case, since the conjoint method of examination was initiated in 1875, any political action might have to be taken with the coöperation of the sister College. It may also be contended that the term "Member" does not now entail more or other obligations than that of "Licentiate" of other medical corporations. But there is no reason to doubt that a body of Members is desirous of taking part in the corporate life of the College, and that this desire is to be considered on its merits by the Council. There may be other and larger issues than those which have appeared in the fitful light of controversy.

CENTENARY OF BIRMINGHAM MEDICAL SCHOOL.

THE centenary of the Medical School of Birmingham University will be celebrated on Dec. 8th, when it is proposed to confer honorary degrees on Mr. Neville Chamberlain, Minister of Health; Sir Donald MacAlister; Sir Humphry Rolleston; and on Mr. Priestley Smith, the doyen of the medical profession in Birmingham. The first records of any teaching in medicine in Birmingham go back to 1768, when Mr. John Tomlinson, surgeon to the Town Infirmary, held a course of anatomical lectures during the winter season for the medical students apprenticed to medical practitioners in the town. Tomlinson was the first provincial surgeon to give regular anatomical lectures, and his name should be handed down to posterity on that account. The General Hospital was founded in 1779 by Dr. John Ash, who became one of its first four physicians, the other three being Dr. Smith, Dr. Withering, the introducer of digitalis into practical medicine, and Dr. Edward Johnstone, who died in 1851 at the age of 94. The seed of the modern flourishing and important school was planted on Dec. 1st, 1825, when William Sands Cox, then 24 years of age, delivered the first of a series of anatomical lectures. Clinical lectures had been delivered long before this in Birmingham, but Cox introduced the systematic instruction of medical students at No. 24, Temple-row. Cox had studied himself at the General Hospital, and after being articled to his father had continued his studies in London at Guy's and St. Thomas's Hospitals, obtaining the M.R.C.S. in 1824. He then went to France, where he studied under Laënnec, Lisfranc, and Cuvier, and where he met Quain, the anatomist. On his return to Birmingham Cox urged the formation there of a school of medicine, and in 1828 the senior members of the local medical profession decided to follow the lead given by Manchester and Leeds. In spite of much opposition the school was fairly started by 1834, when 90 students were enrolled. Two years later King William IV. accepted the position of patron and conferred upon the school the title of the Birmingham Royal School of Medicine and Surgery. In 1843 a charter granted by Queen Victoria resulted in the renaming of the school as Queen's College. When Cox retired in 1865 the College was still heavily in debt and its future uncertain, but three years later it joined forces with the Sydenham College connected with the General Hospital. Later, after the foundation of Mason Science College, some of the preliminary medical training was transferred there, and in 1892 the medical faculty of Queen's College became the Queen's Faculty of Medicine to Mason College. The final step was the incorporation in 1897 of Mason College as a University College, the charter conferring University status being granted three years later. During the present century the growth of the medical faculty has continued unchecked, a flourishing dental school has arisen, and the outstanding event has been the opening of the new buildings at Edgbaston by

King Edward VII. in 1909. A short history of the School, compiled by the medical faculty and the Birmingham Medical Institute will be published [1] on the day of celebration.

THE PSYCHO-PHYSICAL BORDERLAND.

NOT so long ago there was a curious borderland between psychology and physiology which was apt to be the despair of the psychologist and the derision of the physiologist. The convinced experimentalist looked rather askance at inquiries which on the one hand were hardly objective and on the other seemed little different from his own field in the brain and special senses. But, as Sir Charles Sherrington pointed out in his anniversary address to the Royal Society on Nov. 30th, there has lately been a divergence and separation of interests and methods which is likely to make for progress on both sides. Psychology is more sure that it is really possible to investigate fruitfully the workings of the mind by means of the mind, and is more content to leave the synonymy of brain and mind for the time being in the air. Physiologists at the same time have been pursuing the analysis of the behaviour of the higher animals in terms of physiology and without any reference to the psychical factors which are involved, and they have made much progress in interpreting behaviour in terms of the principles of reflex action. Pre-eminent in this advance in natural knowledge are Pavlov and Magnus. Prof. Magnus, Croonian lecturer to the Royal Society this year, shows, for example, that a cat without cerebral hemispheres will respond to the stimulus of seeing a mouse by putting itself in the completely appropriate posture to leap in the right direction on to the mouse. The reaction is a complicated postural reflex similar in precise purposiveness to that by which a cat achieves "rightside-upness" when it is thrown out of the window. It brings the animal up to the point where it has to decide whether it will jump at the mouse or not; this it cannot do without more brain than it has. Prof. Pavlov and his pupils have taken up the problem at this stage as an act of behaviour, and in their study of conditioned reflexes have shown that the final outcome is the sum of impelling and restraining impulses which are determined partly by the circumstances of the moment—and especially by their time relations—and partly by the circumstances under which the act has been elicited in the past. This line of inquiry comes very near psychology, but it is pursued with a strict avoidance of all reference to psychical reactions. Indeed, it leads to a group of facts which is obviously common ground to psychologists and physiologists, and that they now approach this meeting point each from their own side and each with their own axioms and fundamentals is plainly a gain from which much may be hoped for. Both parties can now look on the insoluble riddle of the relation of brain and mind as their possible goal rather than as the point from which each must start out; to look for what you cannot see is more hopeful than to start from an unknown place.

WE regret to announce that Sir John MacAlister, for 38 years secretary of the Royal Society of Medicine, died at his home in London on Dec. 1st. A memorial service will be held at St. Peter's Church, Henrietta-street, Cavendish-square, on Saturday, Dec. 5th, at 1 P.M., to be followed by a private cremation at Golders Green. The House of the Royal Society of Medicine will be closed on that day from 12.30 to 2.30 P.M.

[1] Birmingham: Cornish Brothers. 2 . 6*d*.

A KINDLY THANK-OFFERING. — The patients, friends and neighbours of the late Dr. W. R. Kirkness, of Pembury, Tunbridge Wells, who died on Sept. 19th, have subscribed the sum of £330 as a very small appreciation during the past six years, and in memory of his self-sacrificing devotion to duty.

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THE TREATMENT OF RUPTURED MUSCLES AND TENDONS.

A MUSCLE or its tendon may become lacerated either subcutaneously or as part of an open wound. The following remarks are confined to subcutaneous rupture.

A muscle is usually torn as the result of a sudden and almost involuntary contraction, and the tearing may be partial or complete. The most common site is the junction of the tendon with the fleshy fibres, but the tendon itself may snap or be separated from its attachment, sometimes carrying with it a fragment of bone. A common symptom is sudden pain as though the limb were struck with a cane; the snapping of the tendon may be heard at the same time. But frequently the only symptom noticed is the weakness of the limb. The muscles or tendons most often ruptured are the tendo Achillis, ligamentum patellæ, quadriceps extensor, plantaris, adductor longus, biceps cubiti, and extensor tendons of fingers. These, too, are the muscles most frequently involved in the injuries of athletes.

Rupture of the Tendo Achillis.

The heel tendon is the most frequent to rupture. The injury occurs when the tendon is subjected to any sudden or forcible strain, of which dancing is a traditional example. A gap can be felt between the divided ends, but by bringing the foot into the attitude of equinus the interval is lessened and good union always takes place under proper treatment. I know of no instance during the last 12 years at the Royal National Orthopædic Hospital, where tenotomies are very frequently performed, where union failed after tenotomy of the tendo Achillis for congenital talipes—and this in spite of the fact that the tendency is deliberately to increase rather than diminish the gap after section. In treating this condition there is no need to make the patient lie up. All that is necessary is to raise the heel of the boot by adding half an inch of leather and to prevent movement at the ankle. This is accomplished by attaching a rigid metal rod to the heel of the boot and running it up behind the leg to terminate in a padded leather calf band which buckles to encircle the limb just below the knee. The patient will quickly accommodate himself to this appliance and walk with the limb rotated outwards. To keep the ankle quiet in bed at night a splint should be worn with foot and calf pieces so arranged as to keep the foot in slight equinus. Daily massage of the calf muscles with the foot grasped and held in the equinus attitude will help recovery and maintain muscle tone.

Another simple and efficient method is that devised by Lynn-Thomas through personal experience of the injury. A flattened strip of aluminium is moulded to the dorsum of the foot and front of the ankle and leg. It is then encased in a thick indiarubber tube and is worn between the tongue of the boot and the lacing, the lower strands of the boot-lace being made to encircle the splint to avoid undue pressure. The metal and rubber do not extend upwards much beyond the boot. The appliance may be discarded at the end of six weeks; by then the ends of the tendon will be united by strong white fibrous tissue.

If the tendon has parted from its insertion and taken with it a fragment of bone it is best to cut down and explore, and replace the fragment either by

bone-pegging or suturing with kangaroo tendon. The appliance described above should be worn after about 14 days until bony union is established.

Ligamentum Patellæ.

This tendon is usually torn in a strong effort to avoid falling backwards. It may break in the middle or at either end, in which case it is not uncommon for a piece of bone to be detached at the same time. The rupture is more often complete and the patella is retracted well upwards. In partial rupture the patient should be kept off his feet for a fortnight or longer, according to the severity of the injury, with the knee extended on a splint. A pad should be applied above the knee and bandaged so as to keep the patella pushed downwards. The extensor cruris group of muscles should be massaged daily, for they incline to waste rapidly in any serious injury about the knee-joint. In complete rupture the best treatment is to operate. The same precautions are necessary as when the knee-joint is explored. The joint capsule will be found torn and will require suturing. The tendon should be repaired with strong catgut. If a tibial or patellar fragment has been avulsed it should be reattached by wire or kangaroo tendon. For three weeks after the operation the limb is kept on a bed calliper with a knee-cap and a pad to keep the patella pushed downwards. When the patient is about to get up it is a wise precaution to have his bed calliper converted into a walking calliper, which he should wear for another fortnight or so. Daily massage should be given during the whole time, and when he begins to get up—i.e., three weeks after the operation—active and passive movements of the knee are commenced.

Quadriceps Extensor Tendon.

This muscle is torn in much the same way as the patellar ligament. Owing to the attachments of the expansions of the vasti to the patella and tibia, it is unusual to find a wide separation of the ends. The treatment is the same as for the patellar ligament—i.e., explore and suture the divided ends after removing blood from the joint and closing the capsule. The after-treatment is also the same. In the elderly, or where for some reason the operation is ill-advised, a good result may still be obtained by wearing the bed calliper with knee-cap and pad for six weeks or so, and then, when up and about, a walking calliper for a further period of six to eight weeks.

Plantaris (" *Lawn-tennis Leg* ").

What is commonly called " lawn-tennis leg " has been variously attributed to laceration of one or more of the following structures: the plantaris, soleus, inner head of gastrocnemius, aponeurosis, and deep plexus of veins. Therefore at best the diagnosis is speculative. The most typical symptom is a sensation of being struck by a stone on the calf, followed by weakness of the leg. The limb swells, and sooner or later there is a patch of discoloration due to extravasation of blood. On palpation a gap may be felt in the aponeurosis of the leg with distinct local tenderness. The limb should be treated by raising it for a few minutes to allow the veins to empty as much as possible. Brown holland strapping is then applied in overlapping strips of about an inch and a half wide, extending from just above the ankle to the upper part of the calf. The plaster bands should not encircle the limb completely; there should be an inch gap in front. The patient should then be told to walk freely. He may hesitate in bringing his heels down, but he should be encouraged to do this and to walk with a full step. The strapping will be loose in three or four days and should be then reapplied. The plaster is renewed at intervals up to a fortnight or longer until the patient has recovered sufficient confidence to dispense with it.

The essential points in the treatment are the splinting of the lacerated tissue by the plaster and the patient's own active movements. Massage is unnecessary.

Adductor Longus (" *Rider's Strain* ").

Rupture of the adductor muscles of the thigh is an injury to which hunting men are liable. It is produced by the sudden grip of the saddle when taking a fence or in controlling a restive animal. A hæmatoma of varying size develops and underneath a gap can be felt in the muscle; there is frequently pain and discomfort which may extend to the perineum, and in a day or two there is considerable discoloration. The treatment should first be directed towards dispersing the swelling and relieving the pain. This is best done by gently massaging the area from below upwards. A pad of wool is then placed over the seat of the injury and pressure maintained by a bandage applied in spica fashion. The massage is kept up for three or four days, and then the limb is strapped and the patient encouraged to move about.

The rest of the treatment resembles that of " lawn-tennis leg." Quiet riding may be resumed in a fortnight.

Biceps Cubiti.

The biceps is torn more frequently than any other muscle in the upper limb. The rupture occurs during violent contraction in either the short or the long head or in the belly. Of three cases in my experience, one occurred whilst coal-mining, another during a climb in the Alps, and the third when carrying a load. This last case was characteristic. Two soldiers were carrying a plank when one of them accidentally dropped his end, and the other, suddenly lurching forward, felt something give way in the arm. All three patients complained of weakness in flexing the forearm. There is no difficulty about the diagnosis; on contracting the arm a prominent lump forms in front in striking contrast to the other limb; where only one head is torn this is retracted, leaving a groove where the tendon sheath only may be palpated, with the undamaged head running alongside.

Owing to the great tendency to retraction, massage is of little avail; the only satisfactory treatment is to operate and suture the torn muscle. Of the three cases cited two refused operation and no improvement resulted. The third had the muscle exposed and the inner head was found ruptured with the lower end coiled up. The sheath was intact for its greater part. The upper end of the tendon was pulled down inside its sheath and the two ends united by catgut. The arm was nursed in the flexed position on a splint for ten days, when massage and passive movement were commenced and the splint retained for another ten days. After that the patient was allowed gradually to use the arm and recovered completely.

Extensor Tendons of Fingers (" *Mallet Finger* ").

The finger extensor tendon is frequently torn by a blow on the end of the digit. This occurs in the cricket field and amongst housewives when making up beds. The terminal phalanx drops with inability to extend it. The tendon is often only partially torn or the fibrils frayed. The best treatment is to splint the finger for three or four weeks according to the severity of the injury. A duralumin splint half an inch wide and extending from the finger-tip to the head of the metacarpal is applied with strapping and padded with wool. An extra small pad of wool is applied between the splint and the tip of the finger to promote slight hyperextension of the terminal phalanx. This splint is worn for ten days and then a shorter splint reaching to the web of the fingers is applied. When the splint is left off the finger is massaged and active movements commenced gradually and increased until full voluntary extension is possible.

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Special Articles.

GENERAL MEDICAL COUNCIL.

DENTAL EXAMINATIONS.

AT the session of the General Medical Council held last May it was decided that certain resolutions of the council on dental examinations should be forwarded to the various licensing bodies, who should be asked to comment upon them. On Nov. 24th the Dental Education and Examination Committee of the Council presented its observations on the replies received. One of the recommendations of the Council was "that, where possible, candidates should be tested in the mode of administration of general anæsthetics in common use in dental practice and should be required to perform extractions." It was reported that in the final examination the University of Birmingham has no practical tests in the administration of anæsthetics and that the Universities of Liverpool and Manchester do not require candidates to perform extractions. At the Royal College of Surgeons of England a certain number of candidates is always called upon to extract teeth under anæsthetics in the final examination, but this test is only applied to a small proportion of the whole number examined. The Council of the Royal College of Surgeons of England strongly disapproves of candidates under examination being called upon to administer anæsthetics to patients. Having considered the answers received the Dental Education and Examination Committee recorded its opinion that—

The test of performing extractions in the final examination for a dental qualification is as important as the other practical tests required by all the licensing bodies; and that, when circumstances permit, it would greatly add to the efficiency of the examination if candidates were tested in the administration of anæsthetics in common use in dental practice, carried out under the personal supervision of the examiners. If the anæsthetics be administered by a skilled anæsthetist the candidate should be questioned on the mode of administration, and the possible dangers which may arise therefrom.

A regulation making it obligatory to pass all the dental subjects of the final examination at one time is apparently enforced by all the licensing bodies except Manchester University; whilst the recommendation that candidates remitted in any subject of a professional examination should, before being readmitted to examination therein, produce evidence of further study in this subject, is not carried into effect at Queen's University, Belfast. The Royal Faculty of Glasgow suggests that this further course of study should be asked only of those who obtain less than 40 per cent. of the available marks. The Council decided that the application of the regulation should not entail a period of remission of more than six months, and directed that the attention of licensing bodies should again be drawn to its resolutions and to the observations on them contained in the Dental Education and Examination Committee's report.

THE DENTISTS REGISTER.

A communication was read stating that the Dental Board had considered the case of John Begg, which had been referred back by the Council for further inquiry, and had not found that his name ought to be erased from the Register. A report was also received from the Board concerning Thomas McGowan, registered as of 26, Whalley New-road, Blackburn, who was convicted of a felony at the Liverpool Assizes on Oct. 30th, 1925, and sentenced to 12 months' imprisonment. The solicitor to the Board presented the facts to the Council, which deliberated in camera and directed that Mr. McGowan's name should be removed from the Register.

The President then announced that the Registrar to the Dental Board had been directed to restore to the Register the names of Stuart Christopher Nicol and James Edward Smyth.

THE MEDICAL REGISTER.

The Case of Alexander Dawson Reid.—This case was adjourned from Nov. 27th, 1924, when Mr. A. D. Reid, registered as c/o R. Crosbie, Barclays Bank, High-street South, London, E. 6, appeared before the Council on account of convictions for drunkenness. The charges against him were then proved to the satisfaction of the Council, but in consideration of evidence that he was suffering under physical disabilities and of an assurance from Mr. Reid that he would henceforward refrain from alcohol, the Council postponed its decision for 12 months. Testimonials as to sobriety during this period were received, and Mr. Hempson, solicitor, who appeared on behalf of the Medical Defence Union, stated that Mr. Reid had kept his promise to abstain from drink. After deliberation in camera, the President announced that the Council had not seen fit to direct that Mr. Reid's name should be erased from the Register.

The Case of John Evans.—On Nov. 26th, 1924, Mr. Evans, registered as of 6, High-street, Yiewsley, Middlesex, appeared before the Council on a charge of having issued 79 medical certificates required for National Health Insurance purposes during the period Sept. 5th, 1922, to March 11th, 1924, without having seen the insured person to whom they referred at any time between these dates. The Council at that time postponed judgment for 12 months. Letters from practitioners testifying to the good conduct of Mr. Evans during the interval having been produced, the Council considered the case in camera and the President announced its decision as follows—

"Mr. Evans: As I warned you a year ago, the Council takes a very grave view of any laxity on the part of a registered medical practitioner in giving Certificates, a privilege which is entrusted to him by the State in the belief that he will exercise it honourably; but, having had good reports of your conduct since November last, the Council are now satisfied that you will be more careful in the future and do not see fit to direct the Registrar to erase your name from the Medical Register."

The Case of Alexander Duguid.—The Council then considered the case of A. Duguid, registered as of 20, Meadow-road, Leeds, M.B., Ch.B. Aberd., who appeared on the following charge:—

"That, being a registered medical practitioner and a lieutenant in the Royal Army Medical Corps, you were tried by a Field General Court Martial, held overseas on July 14th, 1917, on the following charge, viz.: when on active service drunkenness, in that you, at Mikesse on June 30th, 1917, having been warned for the duty of accompanying patients to Morogoro, were drunk, of which charge you were found guilty, and sentenced to be dismissed from His Majesty's Service; and that in relation thereto you have been guilty of infamous conduct in a professional respect; and that you were at the Leeds City Police Court convicted of the following misdemeanours viz.: On May 2nd, 1922, of disorderly behaviour while drunk, for which you were fined 10s. or seven days' imprisonment; on April 24th, 1925, of being found drunk and incapable, for which you were fined 10s. or seven days' imprisonment."

Mr. Duguid was accompanied by Mr. O. Hempson, solicitor, who was instructed by the Medical Defence Union. Mr. Hempson objected to the two offences of which his client had been convicted at the Leeds City police court, being classed as misdemeanours under Section 29 of the Medical Act, 1858. A misdemeanour, he argued, is an offence, less than a felony, which is the subject of indictment. The offences in question had been the subject of summary jurisdiction, and therefore should not be regarded as misdemeanours. The Council could only deal with them, he considered, under the heading of "infamous conduct" and not under that of "convictions." The Council's solicitor quoted authority to the effect that any crime less than a felony is a misdemeanour, whether indictable or not, and the President, on the advice of the Council's legal assessor, overruled Mr. Hempson's objection.

In the course of examination Mr. Duguid stated that on June 30th, 1917, he was off duty; he had transferred the care of his patients to a relieving officer and he had not been warned for duty as alleged. On May 2nd, 1922, he was one of a wedding party at a railway station, and although he had "had a drink" he was by no means drunk. He was taken to the police station and pleaded guilty to the charge in order that the incident might be closed as soon as possible; but he had resolved to abjure alcohol and had been a total abstainer ever since. The conviction on April 24th, 1925, was, he stated, the result of an error. On the previous night he had taken large doses of dial—8 or 10 tablets—for insomnia, and this had made him unwell. In the morning he called in a fellow practitioner, who advised him to stay indoors for 48 hours; but this advice he disregarded. He went out, was overtaken by faintness, entered a cab, and was driven to the police station. Neither on this nor on the previous occasion was he examined by a police doctor. Mr. Hempson produced letters of testimonials to Mr. Duguid's character, and the Council deliberated in camera. The President then announced that the charge and convictions had been proved to the Council's satisfaction; nevertheless, in view of the evidence submitted, the Council had not seen fit to direct that Mr. Duguid's name should be erased from the Register.

The Case of Charles Bertrand Wagstaff.—Mr. C. B. Wagstaff, registered as c/o National Provincial Bank, 50, Cornhill, London, E.C. 3, M.R.C.S. Eng., L.R.C.P. Lond., was charged with having abused his position as a medical practitioner by committing adultery with a married woman, with whom and whose family he stood in professional relationship, of which adultery he was found guilty by a decree of the High Court of Justice, dated June 11th, 1925. Mr. Wagstaff did not appear in answer to his notice, but wrote saying that he denied that adultery took place, but realised that it would be impossible to prove the contrary to the Council. Evidence of Mr. Wagstaff's attendance in a professional capacity on the persons concerned having been put forward, the Council considered the case in camera and the President announced that the Registrar had been directed to remove his name from the Register.

The Case of George Joseph Mary Fraser.—Mr. Fraser, registered as of 36, Blenheim-crescent, London, W. 11, and having the Irish Conjoint qualification, appeared to answer the charge that he had been convicted on Oct. 21st, 1924, of failing to notify a case of tuberculosis and the birth of a child, and—

"That, being a registered medical practitioner you, by your presence, countenance, advice, assistance, or coöperation, knowingly enabled an unqualified and unregistered person, viz., one Ulric Knyvett Hoff: (1) To attend, treat, or perform operations upon patients in respect of matters requiring professional discretion or skill, or otherwise to engage in professional practice as if the said person were duly qualified and registered; (2) to issue certificates, notifications, reports, or other documents of a kindred character in your name or on your behalf. That being a registered medical practitioner: (1) You signed a certificate of death on April 3rd, 1924, of one Mrs. Sarah Jenner, certifying that you attended her during her last illness, and that you last saw her alive on March 30th, 1924, whereas you had not attended or seen the said Sarah Jenner during her last illness at all; (2) you signed a certificate of death on Feb. 8th, 1925, of one Mrs. Amelia Wimmer Lembo, certifying that you had attended her during her last illness, and that you last saw her alive on Feb. 8th, 1925, whereas you had not attended or seen the said Amelia Wimmer Lembo during her last illness at all; (3) you signed a certificate of death on Feb. 12th, 1925, of one Mrs. Elizabeth Whiting, certifying that you attended her during her last illness, and that you last saw her alive on Feb. 12th, 1925, whereas you had not attended or seen the said Elizabeth Whiting during her last illness at all, which certificates were untrue, misleading, and improper; and that in relation thereto, you have been guilty of infamous conduct in a professional respect."

Mr. Charles Davis, solicitor, of the firm of Bulcraig and Davis, conducted Mr. Fraser's defence, and the hearing, which began on Tuesday, did not end till Thursday, Nov. 26th. In brief, Mr. Fraser's answer to the charge was that he never had any reason to doubt that Hoff was a qualified and registered practitioner until Feb. 8th, 1925, when Hoff informed him that he was not on the Register. He denied that the certificate of the death of Mrs. Sarah Jenner given on April 3rd, 1924, was in any way inaccurate; but admitted that, under the stress of circumstances, he gave the two other death certificates without having attended the patients as stated. He did not know that Hoff was unqualified until March 31st, 1925, some time after they had parted company.

Mr. Fraser's statements were to the following effect. In 1911, about the time of his qualification in Dublin, he was introduced to Hoff by a member of the honorary staff of his hospital. Hoff stated that he had a medical degree of Calcutta University and invited Mr. Fraser to act as his assistant and locum tenens on a tea plantation in Bengal of which he was medical officer. Mr. Fraser served in India in this capacity for more than a year and then returned to start a practice in Mile End-road, London, which he later left to serve in the war. In 1918 he received a call from Hoff, who acted as his assistant for a time. In January, 1924, he bought a practice in Kensington and on meeting Hoff in Southampton-row in a destitute condition invited him to act as locum tenens. Mr. Fraser was at times crippled by sciatica and the arrangement seemed satisfactory. Hoff had been acting as house physician at Doncaster and Hartlepool Infirmaries and elsewhere, and produced brilliant testimonials from a large number of doctors all over the country to whom he had acted as locum tenens or assistant. It never occurred to Mr. Fraser to question his qualifications or registration, and he engaged him at eight guineas a week. Later the remuneration was reduced to four guineas without night work. Hoff proved thoroughly competent, and the word registration was never mentioned between them until Feb. 8th, 1925, when Hoff suddenly appeared and asked Mr. Fraser to come and see Mrs. Lembo, whom he was attending, and who was dying. Dr. J. S. Goodall had been called in as a consultant. Hoff now admitted that he was not, in fact, registered though he was qualified for registration. (It was later discovered that he had taken a part of his examination for the licence of the Apothecaries' Hall, Dublin, and that whilst employed during the war at the institutions mentioned he had been granted by the Registrar-General a temporary privilege of signing death certificates for patients dying in these places.) Mr. Fraser and Hoff hastened to Mrs. Lembo's house, only to find the patient dead. It seemed impossible to ask Dr. Goodall for a certificate in case his suspicions should be aroused. Mr. Fraser was ill at the time. He thought it best to sign the certificate himself, pending Hoff's registration, and, having done so, he returned to his nursing-home. Four days later Mrs. Whiting died whilst under Hoff's care. Mr. Fraser again thought that the only possible course was to give a certificate himself. These two certificates were, he stated, his only lapses. On Saturday, March 14th, 1925, Mr. James Fenton, M.B., medical officer of health for the Borough of Kensington, had reason to make inquiries about a case of alleged scarlet fever said to be under Mr. Fraser's care. He called at the house, but was told that Mr. Fraser was in a nursing-home and that Hoff was acting for him. Hoff was out, but it occurred to Mr. Fenton to look up his name in the Medical Directory. On finding that it did not appear he rang up Hoff and told him of the omission. Mr. Fraser said that on returning home that day (Saturday) he heard of the incident and insisted that Hoff should accompany him to see Mr. Fenton on the following Monday morning. Mr. Fenton was then told that Hoff was not on the Register (although entitled so to be) and from March 14th onwards, said Mr. Fraser, Hoff and he had nothing to do with one another except in connexion with debts and defalcations which Hoff had incurred in the practice.

In support of Mr. Fraser's case evidence was brought of the respect in which he and Hoff were held by their patients, and Mrs. Eileen Fraser testified to the circumstances under which her husband visited Mrs. Jenner on March 30th, 1924. In support of the charge the Council's solicitor called the daughter of the late Mrs. Jenner, who denied emphatically that it was possible for Mr. Fraser to have called on the deceased on March 30th, 1924, without her cognisance. Cross-examined, Mr. Fraser admitted that he had not examined the patient or recommended treatment and was uncertain as to who let him into the house. It was stated that no record of the visit had been made. The Council's solicitor then drew attention to an incompatibility in the statements of the defence. He quoted a declaration made by Mr. Fraser at Scotland Yard to the effect that when Hoff visited him in Mile End-road in 1918 he knew that Hoff was not registered, and also drew attention to a letter sent to the Council on Mr. Fraser's behalf by his solicitor in June last in which it was stated that Mr. Fraser was aware of this fact in 1922. In reply to cross-examination on these points Mr. Fraser said that both statements were incorrect. The first was made under the influence of nervousness, and the second was a result of confusion of dates.

At the conclusion of the hearing the Council deliberated on the case in camera, and the President announced that the charges had been proved to the Council's satisfaction and that the Registrar had been directed to erase Mr. Fraser's name from the Register.

The Case of Andrew George Tottenham Hanks.—Mr. Hanks, who is registered as of Edith-grove, Chelsea, London, S.W., and holding the Irish Conjoint qualification, appeared upon a charge of having been convicted of drunkenness on several occasions. He was not charged with infamous conduct in a professional respect. Mr. Hempson, instructed by the Medical Defence Union, appeared on Mr. Hanks's behalf and formally objected, as on a previous occasion, to the charges being brought under the part of the Medical Act, 1858, which relates to convictions for misdemeanours. His objection was overrruled. It was stated that at the age of 51 Mr. Hanks had served in France as a Territorial and had been invalided home, since when he had been in poor health. In January, 1922, he had fallen from his horse and injured his head, and the illness and accident had made him very susceptible to alcohol. Since July last, however, he had been a total abstainer. Letters were read from doctors and others stating that before his health was damaged Mr. Hanks was an abstemious man, and testifying to his high character, and after the Council had considered the case in camera the President announced that judgment would be postponed until May next in order that evidence might be produced of satisfactory conduct in the intervening period.

The Case of Algernon Randolph Upton.—Mr. Upton, registered as of Medina Villas, Hove, M.R.C.S. Eng., L.R.C.P. Lond., appeared before the Council on the charge—

"That, being a registered medical practitioner and whilst acting as locum tenens for Theodore Charles Pocock, a registered medical practitioner, and subsequently thereto, you sought to attract to yourself patients and to promote your own professional advantage: (1) By inviting panel patients of the said Theodore Charles Pocock to become panel patients of yours; (2) by filling in your name on the medical cards of panel patients of the said Theodore Charles Pocock, without being authorised so to do, in order to have them transferred to your panel; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. F. W. Gentle appeared as counsel for Mr. Upton, instructed by Mr. F. W. A. Cushman, solicitor, whilst the complainant, Mr. T. C. Pocock, M.B., was represented by Mr. Ray Neve, his counsel, instructed by Messrs. Dell and Loader, his solicitors.

In the spring of 1924 Mr. Pocock was compelled to enter a sanatorium, and it was suggested to him that he should retain Mr. Upton, the son of a neighbouring practitioner, as his locum tenens. Without making any special inquiries he fell in with the suggestion; there was no agreement that Mr. Upton should not later enter practice in the neighbourhood if he wished. At this time Mr. Upton was not on the panel, and in order to regularise the position an arrangement was made in October, 1924, that his name should appear as that of Mr. Pocock's deputy. The engagement ended on April 29th, 1925, when Mr. Pocock came back to his practice and the two parted on good terms. Later, however, Mr. Pocock received a list of the names of 73 patients who had removed their names from his panel and on making inquiries discovered—so he alleged to the Council—that Mr. Upton had been asking some of his patients whether they would like their names transferred to his panel, and that the doctor's name on the patient's card had in two cases at least been changed without the patient's consent. In support of these charges a number of witnesses was called. Several members of a family named Boone stated that Mr. Upton had been called in to see a child at their house and had told them, without being questioned, that he was going to start practice in the town and "that he already had a good few patients of Dr. Pocock's and would be glad to have the Boones on his list if they felt like making a change." One member of the family present at the time was unable to confirm the details of this conversation and said that she could not be certain whether she had heard this remark. Other witnesses stated that they had been invited to change to Mr. Upton's panel, and evidence was also tendered by a man who said that he had left his card at the surgery and had received in its stead a new card bearing Mr. Upton's name, although he had never authorised any such change. In the course of cross-examination Mr. Pocock said that he had been a candidate for municipal election, and whilst admitting that he might have offered the literature of his party to patients who came to see him, denied emphatically that he had ever allowed bottles of medicine to go out from his dispensary with the words "Vote for Pocock" written on them, and disagreed with the suggestion that a considerable number of patients had been alienated by his canvassing for his party. He was quite unaware, he said, that Mr. Upton had been in practice in Hove before acting as his substitute. Mr. Upton said that he had been a surgeon-lieutenant in the Navy and had served in the Indian Medical Service. After leaving India he had returned home and for two years had conducted a small private practice in Hove from his father's house. He denied absolutely the charges that had been made against him. He had never invited any patient of Mr. Pocock's to transfer to his panel, and the statements of the witnesses who asserted the contrary were not expressions of the truth, but of personal bias in favour of Mr. Pocock and against himself. The fact that cards had had the name of the doctor altered to his own was immaterial. Whether they were actually in the name of Pocock or of Upton, they were credited to Mr. Pocock, just the same, according to the arrangement by which he served as deputy on the panel for Mr. Pocock. He had started practice on May 1st, 1925, with only one panel patient of his own, who had transferred himself previously without any suggestion that he should do so.

At the close of the hearing on the following day, another witness tendered evidence on Mr. Upton's behalf and the Council considered the case in camera. The President then announced that the facts alleged against Mr. Upton had not been proved to the satisfaction of the Council.

The Case of Edward William Dacre Hardy.—Mr. Hardy, registered as of Durley-road, Bournemouth, M.R.C.S. Eng., L.R.C.P. Lond., appeared to answer a charge of having, between June 30th, 1924, and April 16th, 1925, sent 31 prescriptions for morphia tablets (to be supplied on three occasions) and morphia suppositories to a woman who had been his patient during May and June, but whom he never saw after June 24th, 1924; the giving of these prescriptions

being an abuse of the privileges conferred on medical practitioners by the Dangerous Drugs Act.

Sir Travers Humphreys conducted the case on behalf of the Director of Public Prosecutions. He said that although the Home Office had no feeling against Mr. Hardy, whose record of practice was very creditable, it disapproved of his attitude towards what he had done. Mr. Hardy stated that the patient, Mrs. Coke, came under his care at Bournemouth in May, 1924. For the previous 16 years or so she had been suffering from cystitis and rectal pain and had become addicted to morphia, but under the care of a doctor the daily dose had been reduced to 2 gr. Mr. Hardy attempted to reduce the dose further, but this proved impossible, and when in June the patient said that she was going to London for about six weeks and was most anxious not to be transferred to another doctor, he agreed to send her prescriptions for this minimal quantity of the drug, thinking that the arrangement would prevent the patient taking her own measures to satisfy the craving. For the same reason he continued to send prescriptions, and as he often heard from Mrs. Coke did not realise that so long a time had passed since he had seen her. In February, 1925, she went to see Mr. G. E. Cope, to whom she gave Mr. Hardy's name as that of her medical attendant, and correspondence was exchanged. Mrs. Coke died on April 23rd, and at the inquest death was stated to be due to hydronephrosis and uræmic coma, accelerated by chronic morphia poisoning, together with local peritonitis and pneumonia. The coroner said that he hoped that Mr. Hardy was ashamed of himself, but Mr. Hardy replied: "No, Sir, I am not." He now realised, he said, that his action might have led to Mrs. Coke receiving the morphia ordered by him in addition to that prescribed by some other doctor, and that it was not a proper thing to have sent the prescriptions. Sir Travers Humphreys said that this was a very fair explanation. Dr. D. Hyla Greaves appeared as witness to Mr. Hardy's high character, and, amongst others, a testimonial was received from 35 members of the honorary staff of the Royal Victoria Hospital, Bournemouth, and another from the Bournemouth division of the British Medical Association, of which Mr. Hardy is chairman. After the case had been considered in camera the President said that the Council took a very grave view of any abuse of the privileges conferred upon medical practitioners under the Dangerous Drugs Acts, which involved a trust by the Government in the honour and good faith of the profession. The Council had already given notice that any contravention or any abuse of the privileges, whether it were criminal or not, constituted an offence of which the Council would take notice. The Council regarded the facts alleged against Mr. Hardy as proved, but, having regard to the warning he had received during the proceedings and to his assurance as to his conduct in such matters in the future, the Council trusted that his conduct in reference thereto would henceforth be beyond reproach. Accordingly it had not seen fit to direct the Registrar to remove Mr. Hardy's name from the Register.

The Case of William Lloyd.—On Saturday, Nov. 28th, the Council considered the case of Mr. Lloyd, registered as of Brook-street, London, W., L.S.A. Lond., L.R.C.P. and L.R.C.S. Edin., and L.F.P.S. Glasg., who appeared at the complaint of the British Medical Association on the following charge:—

"That, being a registered medical practitioner you sought to obtain patients and to promote your own professional advantage by means of an article published in the *Daily Mail* of June 5th, 1925, entitled 'Hay Fever—New Treatment—Specialist's Report—Patients Cured,' which was based upon materials supplied by you; and sought to obtain as patients certain persons who, after reading the article, had written to the *Daily Mail* for your name, and whose letters were forwarded to you by the *Daily Mail*, and to whom you wrote inviting appointments to be made for treatment, although they had not themselves communicated with you; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. W. E. Hempson appeared for the complainant and Mr. J. B. Melville was counsel for Mr. Lloyd, instructed by Messrs. Cooper, Bake and Co., solicitors. A number of members of the Council who are members of the British Medical Association took no part in the proceedings.

An article was read which appeared in the above-mentioned newspaper of June 5th, 1925, and purported to describe the remarkable results obtained by a London specialist in the treatment of hay fever. The article was written in a "popular" manner and contained derogatory references to common forms of treatment. These were given as coming from the specialist himself, as also were certain details of successful cases and of experiments proving that cured patients remained immune when exposed in hay-fields. Statutory declarations were made by three sufferers who had applied to the *Daily Mail* to know the name of the specialist. One of these said that in reply to his application he had received an undated typewritten letter from the news editor saying that he now had permission from the doctor referred to in the article to give his name to inquirers. Mr. Lloyd's name and address were appended. Later the witness had received a card, from Mr. Lloyd's address and signed by a secretary, stating that Mr. Lloyd would be pleased to see him by appointment and that his fees were four guineas and two guineas. A second witness had had an undated typewritten letter from the news editor saying that his letter of inquiry had been forwarded to the specialist mentioned in the article and had later also received an appointment card. One of the witnesses had communicated with the British Medical Association. On behalf of the Association Mr. Hempson said that in view of the large circulation enjoyed by the newspaper referred to it was hardly possible to imagine a more gigantic advertisement. The article read like the announcement of a quack. A letter from the manager of the legal department of the Associated Newspapers to the General Medical Council stated that Mr. Lloyd had made no objection to the article being written provided that his name was not mentioned and no indication of his identity divulged. The article had attracted considerable attention and a large correspondence, and many telephone calls had been received from readers. Unfortunately a subordinate member of the staff had communicated Mr. Lloyd's name to a limited number of inquirers and the writer of the article had asked Mr. Lloyd to see a few selected cases by appointment.

Mr. William Lloyd said that for some years he had been in consultant practice as a specialist in diseases of the throat, nose, and ear, and held various hospital appointments. He had a very large practice and enjoyed an income of many thousands a year. He had no possible motive for advertisement. On June 4th, 1925, he said, he had a visit from a journalist connected with the Associated Newspapers, who came as a sufferer from hay fever. During treatment he spoke of the work he was doing, and showed a book on hay fever which he had written some years ago and which had been withdrawn and was not now obtainable. The journalist took no notes, and was not given a copy of the book or any written information. When the treatment was over he said to Mr. Lloyd that he might write an article on it. Would there be any objection? Mr. Lloyd said that if an article was written, on no account must his name be mentioned owing to his enormous practice. The article appeared next day. Mr. Lloyd was so busy that he did not pay a great deal of attention to it; but he protested vigorously to the journalist on several occasions when he came for treatment, saying that to have published the article so quickly without letting him know was very unfair and had placed him in a very awkward position. Not a word in the article was his own, and though some of it was founded on his conversation during treatment, much of it bore no

relation to anything he had said. In reply to the protests the journalist had smiled; eventually he had said he was sorry. Mr. Lloyd sent neither protest nor any other communication to the *Daily Mail*, but when the journalist asked him if he would care to see a few selected patients who had inquired about the treatment he replied that he would be willing to see anyone whom the journalist liked to recommend, and informed one of his two secretaries that appointments should be given to a few cases which the journalist might send. Mr. Lloyd himself was so busy that he dealt only with that section of his correspondence marked "Personal," and owing to a misunderstanding his secretary had given cards to all those persons whose names were sent from the newspaper's office. He was not in general in the habit of asking patients where they came from, and neither the journalist nor those whom he recommended enjoyed special terms. Mr. Lloyd denied absolutely that he sought advertisement or professional advantage from the publication of the article.

The Council deliberated in camera and the President announced that the facts alleged had been proved to the Council's satisfaction, and that Mr. Lloyd had been adjudged guilty of infamous conduct in a professional respect. The Registrar had been directed to remove his name from the Register.

The Case of Henry Thompson Keating.—Dr. Keating, registered as of the School of Hygiene, Mount Pleasant Avenue, Liverpool, M.D., C.M. McGill, appeared on Monday, Nov. 30th, on a charge of enabling an unqualified and unregistered person called Looker to treat a patient named Mrs. Hedges, or otherwise to engage in professional practice; and of having been associated for the purpose of obtaining patients with an unqualified or unregistered person who procures or sanctions the advertising or publication of notices directing attention to his professional skill. Mr. Le Brasseur appeared for Dr. Keating, and Mr. Hempson on behalf of the Medical Defence Union which was the complainant. Mr. Le Brasseur said that the proceedings were the result of an unfortunate coincidence. Dr. Keating served in a medical unit in New York in which Looker was a medical officer. He had never had reason to doubt his qualifications, either then or afterwards when Looker was engaged in medical practice in America. In August, 1925, he paid a social visit to Looker, who had come to London, and was asked to see Mrs. Hedges. He examined her and afterwards made arrangements for her to have an operation. On no other occasion was he connected with Looker's practice. Dr. Keating had not seen advertisements of the practice before he saw the case; he was unwilling to operate on Mrs. Hedges, and he had not the slightest intention of unprofessional conduct. Evidence was produced showing that Dr. Keating by illness had been prevented from ventilating his case in order to anticipate the charge being brought. After the Council had deliberated in camera the President announced that the charges alleged had not been proved to the satisfaction of the Council.

The Case of Joseph Stenson Hooker.—Dr. Hooker, who is registered as of 4, Spanish-place, London, W. 1, L.S.A. Lond., L.R.C.S. and L.R.C.P. Edin., M.D. Durh., appeared before the Council on the charge—

That, being a registered medical practitioner, you have sought to attract to yourself patients and to promote your own professional advantage: (1) By associating yourself with the advertising and canvassing carried on through the medium of articles published in the issues of March 21st and 28th, April 4th and May 30th, 1925, of *John Bull*, relating to an alleged "consumption cure," known as the Newell treatment; (2) by sending circular letters regarding the "cure" to persons not under your charge, but whom you thereby hoped to secure as patients; (3) by endeavouring in your own advantage to induce registered medical practitioners to use in the treatment of their patients, and to make themselves responsible for a medicament of whose properties and action such practitioners were ignorant, while refusing to disclose to them the compositions or formula thereof. And that in relation to the facts so alleged, you have been guilty of infamous conduct in a professional respect.

Dr. Hooker was represented by Mr. Leon Freedman, his counsel, instructed by Messrs. Lattey and Hart, and the complainant was the Medical Defence Union, represented by Mr. O. Hempson, solicitor.

During March and April, 1925, a series of four articles appeared in *John Bull* dealing with the Newell Treatment for Tuberculosis. These articles stated that the inventor of the remedy had consulted a fully qualified West End specialist in tuberculosis (whose name could not be given owing to the rules of the General Medical Council), who had had a very high percentage of cures amongst his patients, and that a committee had been formed in London to investigate the new treatment. It was suggested in several of the articles that the negative attitude of officialdom and the conservative outlook of the General Medical Council and the Ministry of Health were responsible for holding up the distribution of the remedy to suffering humanity, and there were photographs in illustration of Sir Donald MacAlister, Mr. Neville Chamberlain, Sir George Newman, and others. Readers of the newspaper were encouraged to write to the editor, who would put them in touch with doctors who could give the treatment. Mr. Hempson produced evidence that a reader who had taken this advice received a letter to say that the inquiry had been passed on to the London doctors investigating the treatment and that he later had a typewritten communication, signed on behalf of Dr. Hooker, saying that if the inquirer's own doctor was unwilling to give the treatment it might be possible to direct him to a doctor in the district who could do so, or possibly it could be arranged that one of Dr. Hooker's own staff should give the treatment. A committee of duly qualified medical men was in constant attendance for such cases. Later the inquirer had a letter saying that on receipt of 2 guineas, a minimal sum arranged to cover overhead expenses and the high cost of the medicaments, Dr. Hooker would send to the patient's doctor enough of the remedy to last for a month. The treatment, it was stated, could only be given by duly qualified medical men. A manifesto to the medical profession was afterwards issued which stated that the remedy was not a secret remedy in the accepted sense since Dr. Hooker and other investigators were aware of its components. The promoters were getting on with the work of curing tuberculosis rather than facing carping critics. The remedy could be guaranteed as absolutely harmless. In a later letter Dr. Hooker said that there were now 600 medical practitioners using the treatment.

Dr. Hooker appeared before the Council in such poor health that he was unable to tender his defence in person and his counsel read a declaration on his behalf. He said that he had never sought to attract patients to himself by advertisement and that at his age such an intention would be unthinkable. He had received the formula of the remedy from the inventor in strict confidence, and though he had been very anxious to reveal its exact nature to the profession, he had not had the right to do so. He had formed the highest opinion of the value of the treatment and had been, and was, extremely anxious to place it in the hands of doctors who were attending sufferers from tuberculosis. The circular letter which had been quoted recommended inquirers to apply to their own doctors, and it was far from the intention of the committee to attract patients to themselves. The suggestion that patients might receive treatment from the committee was in the nature of a last resort, if it was quite impossible for them to receive it otherwise; but it had been pointed out to him that the letter might have a wrong interpretation put upon it, and he had instantly cancelled its circulation. Dr. Hooker then gave an account of negotiations with the General Medical Council and the Ministry of Health. The Council had refused to deal with the matter on the grounds that it was outside its statutory

function. The Ministry had received the formula under the usual pledge of secrecy and had also had an account of cases which had been treated. Dr. Hooker was understood to say that negotiations with the Ministry were still in progress. The discoverer of the remedy had only consented that the formula should be disclosed to the Ministry on condition that this was done through the medium of *John Bull*. Dr. Hooker said that he had supplied materials for the articles only on the pledge that the name of no doctor concerned should appear. His whole object had been to get the medical profession, and the profession only, to try the valuable remedy.

Mr. Freedman said that his client had obviously been animated throughout by a great enthusiasm and by a belief that he could benefit humanity. Mr. Hempson said that the pledges under which the formula was revealed to the Ministry had made it impossible to broadcast the good news—if it were good news—about tuberculosis to the profession. He could not accept the suggestion that Dr. Hooker's conduct had been disinterested. The Council considered the case in camera and the President announced that the charges had been proved to its satisfaction and that the Registrar had been directed to remove Dr. Hooker's name from the Register.

The Case of Sesi Kapo.—The last case before the Council was that of Mr. Kapo, registered as of 49, Broad-street, Lagos, Nigeria, M.B., Ch.B. Edin., who appeared on the charge—

That, being a registered medical practitioner, you conspired with one Albert Taiwo, by supplying to him a fictitious account of £25 for professional services alleged to have been rendered by you to the wife and child of the said Albert Taiwo, in order to enable the said Albert Taiwo to withdraw money from the Provident Fund of the Nigerian Railway, which he was not entitled to withdraw and could not withdraw without a detailed account signed by a medical practitioner. That in respect of such offence, you were tried with the said Albert Taiwo in the District Court of Lagos, and were on March 6th, 1925, convicted of conspiracy and of forging the said account, and were fined £50 or six months' imprisonment, which conviction was upheld on your appeal to the Supreme Court of Nigeria. That, by an Order made on June 15th, 1925, as the result of the said conviction, under Section 13 of the Medical Practitioners' and Dentists' Ordinance, Chap. 46, the Office Administering the Government in Council directed the Registrar of Medical Practitioners and Dentists to strike out your name from the Register. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The case was reported to the Council by the Colonial Office on information received from the officer administering the Government of Nigeria. Mr. Harper, solicitor to the Council, opened the case by quoting from the records of the trial held in Nigeria. Mr. A. Neilson, K.C., who appeared for Mr. Kapo, objected that it was impossible to bring as evidence an account of proceedings conducted elsewhere which were not in the knowledge of any member of the Council. Such an account was not evidence by itself unless witnesses were brought. It was unfair to read an account of a prosecution unless he, Mr. Neilson, had an opportunity to cross-examine the witnesses whose testimony had led to the conviction. The Council's solicitor replied that as the Council had no powers to summon witnesses or to swear them when they came, if the present objection were upheld it would be very difficult to try a case when the witnesses were outside the kingdom. Mr. Neilson said that the fact that the Council was a domestic forum, in which the Council was trying one of its professional brethren, did not make it permissible to try the case in a looser way than would be permitted in a court of law. The legal assessor to the Council said that it was proposed to prove that Mr. Kapo had been struck off the Nigerian Medical Register and convicted in Nigeria. On that evidence the Council would be entitled to strike the name off the Register, but an inquiry into the case was being made in order to discover whether there were extenuating circumstances. The fact that no witnesses appeared might affect the weight of the information, but did not render it inadmissible. Evidence of court-martials held abroad was accepted. The fact of conviction was itself evidence which should be considered. Mr. Neilson asked to see the certificate of conviction, but this could not be produced. Mr. Neilson objected that production of the certificate was an essential preliminary to any proceedings. The President said that the Council was not treating the case as a conviction but on its merits.

The Council's solicitor then read part of the account of the proceedings held at Lagos which led to Mr. Kapo's conviction. The prosecution had suggested that Mr. Kapo's account for professional attendance was wholly fictitious and had emphasised the fact that a police search had failed to find any wife of Albert Taiwo whom Mr. Kapo had attended. Mr. Neilson examined Mr. Kapo in the witness-box. He gave particulars of his attendance on a woman said to be Albert Taiwo's wife and of the bill he wrote out for professional services after delivering her of a child. Mr. Neilson asked for the production of the bill, which was an important document at the Lagos trial. The Council's solicitor admitted that he could not produce it, which Mr. Neilson considered very unfortunate. Mr. Kapo denied that he had ever conspired with Taiwo or anyone else and that he ever had any reason to do so, and a testimonial to his character was read. In closing his client's case Mr. Neilson said that this was by the President's definition a new inquiry. Yet the prosecution had produced no one who could be cross-examined nor any of the relevant documents which were produced at the trial. The trial itself did not seem to have taken the clear course that trials take in England. No one had even suggested a motive for Mr. Kapo's single straying from the straight path. Why should a man imperil his professional career and an income of £500 or £600 for the sake of a share in £25? Why, for the matter of that, should Albert Taiwo have bothered to conspire to obtain £25 from the provident fund seeing that he would have to pay it back out of his wages? As to the charge that the supposed wife of Taiwo was an imaginary person, the chief witness called by the prosecution—namely, Taiwo's "senior wife"—stated clearly that she had existed. The onus of proving the contrary—even if the prosecution had not accepted the evidence of its chief witness as it was bound to do—rested with the prosecution. The judge had admitted that it was just possible that Mr. Kapo had attended this woman, and if there was a doubt the accused should have had the benefit of it. The trial in Lagos, Mr. Neilson was sorry to say, appeared to have been hopelessly muddled. There were not materials before the Council to prove that Mr. Kapo had been properly convicted; there had been many remarkable features about the proceedings, and no motive had been suggested.

After the Council's solicitor had replied the case was considered in camera, and the President announced that the facts alleged against Mr. Kapo in paragraph 1 of the charge had not been proved to the Council's satisfaction. (His name therefore remains on the Register.)

Restorations to Medical Register.

On Nov. 26th it was announced that the Registrar had been instructed to restore the names of Haydn Brown, Patrick Joseph Honan, Trevor Owen Williams, and William Mortimer Sheen to the Medical Register.

EXECUTIVE COMMITTEE.

The report of this Committee contains an account of the negotiations for the re-establishment of reciprocity with Italy referred to in the presidential address on Nov. 24th. Inquiry on the practice of medicine in this country by holders of foreign degrees elicited the information that reciprocity can only be established with a country in regard to which the King has by Order in Council declared that Part II.

of the Medical Act, 1886, shall apply. When reciprocal relations are established it becomes the duty of the General Medical Council to consider which medical diplomas granted in the said country shall qualify their holders for registration by the Council. At present the only foreign countries with which reciprocity exists are Italy and Japan. In view of the overcrowding of the medical profession in Austria it has been suggested that the emigration of Austrian doctors to foreign countries is desirable. It is understood, however, that no foreigner can practise medicine in Austria unless he becomes an Austrian citizen, and this condition, of course, precludes reciprocity. In reply to inquiry the Council stated that the number of British registrations "during this year and for the past two years has been considerably greater than usual, and some time will probably be required before the practitioners newly qualified in this country are absorbed into private practice and vacancies in the public services. It is therefore probable that foreign doctors would have some difficulty in establishing themselves satisfactorily in this country."

PUBLIC HEALTH COMMITTEE.

The report of this committee deals chiefly with the new regulations for the Diploma of Public Health, which require that candidates shall receive instruction over a period of not less than 12 months subsequently to gaining a medical qualification and lay down that the diploma shall not be granted until two years after such qualification. There has been correspondence with various licensing bodies on their interpretation of the new rules. It is noteworthy that the Council recognises for Part I. of the Diploma the courses of lectures and practical instruction given at the Staff College to officers of the Royal Army Medical Corps, and at the Naval Medical School, Greenwich, to medical officers of the Royal Navy. At a meeting of the committee held in May last a communication was received from the Society of Medical Officers of Health giving a considered opinion on the practical training required for the diploma. It was resolved, inter alia, that the committee would keep in mind the suggestions offered and would have regard to them in the interpretation of the rules. It is stated that the Diploma in Hygiene of the University of Cambridge is not recognised by the Council.

MEDICINE AND THE LAW.

THE TIME-LIMIT UPHELD.

THE Court of Appeal has promulgated an important decision upon the limitation of legal liability in the case of a medical practitioner discharging public duties. The Public Authorities Protection Act of 1893 contains, as was illustrated in a recent Edinburgh case,[1] a not unreasonable protection for persons acting in execution of statutory or other public duty. Proceedings do not lie, and are not to be instituted against such persons unless commenced "within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." The wording of the statute is not very happily drafted, and has required legal explanation more than once. It is easy to reckon six months from an act which causes injury or damage. But the phrase "continuance of injury or damage" has been a stumbling-block. The facts on which the decision in the recent case of Freeborn *v.* Leeming is based are briefly these. A man was run over by a motor-car on Sept. 5th, 1923, and was taken into a workhouse infirmary next day. The doctor in charge had no direct contractual obligation towards the patient who was not one of his charges in the ordinary sense; but the law, of course, expects every practitioner to apply reasonably competent skill in the art which he professes. It was alleged that the doctor neglected to make an adequate examination, and that he failed to diagnose a dislocated hip. The plaintiff stayed on in the infirmary till Oct. 15th, and then went home at his own risk. The date is important, because it was the day on which he passed out of that doctor's care. Fresh medical opinion, it was alleged, subsequently diagnosed the dislocation, but found that it was now too late to reduce it; an operation had to be performed, and in consequence the patient has one leg permanently shorter than the other.

Six months and six days after the date on which he left the workhouse infirmary the plaintiff issued his writ, and began his action against the infirmary doctor. Prima facie his action was six days too late. Obviously, if the permanent shortening of his leg was a continuing injury or damage within the meaning of the Act of 1893, he could safely have sued the doctor without time-limit at any moment during the rest of his life. But there was solid legal authority against this view. In Carey *v.* Bermondsey Borough Council (1903) the Court of Appeal decided that the continuance of suffering is not a continuance of injury or damage within the meaning of the Act. Lord Halsbury, who delivered judgment to that effect, had a special gift for common-sense interpretation. Words, he said, must be reasonably interpreted. It was not unreasonable to say that if there was a continuance of an act causing damage, the injured person should have an action at any time within six months of the ceasing of the act complained of. But that was wholly inapplicable to a case where there was no such continuance of the act complained of and where the only suggestion was that, in consequence of the negligent act, the victim was not such a good man as he had been before. The county court before which the recent case was first heard tried hard to find a way round Lord Halsbury's decision. An ingenious argument by the plaintiff's counsel was accepted. The dislocated hip, it was argued, if properly diagnosed originally, would not have been cured, even with proper treatment till, say, eight or ten weeks after the accident. It was not until this prospective date of cure was reached that the plaintiff (being at that moment a still disabled man instead of a now quite cured man) had his full right of legal action. It was at this imaginary but guessable date that the plaintiff's damage arose. If the six months had been reckoned from that date, the plaintiff's action was begun in ample time. Taking this view the county court judge awarded him £1800 damages, but the Divisional Court upset the award on the ground that the action was not begun within the six months. This latter view the Court of Appeal has now confirmed.

The case may be carried to the House of Lords, but any other view than that expressed in the judgment of the Court of Appeal would be disastrous to medical practitioners who hold official positions and would make nonsense of the Act.

MISTAKEN IDENTITY.

The reissue of Mr. Sully's brief study[2] in the psychology of identification is timely. Police methods were criticised in Major Sheppard's case, and, still more recently, the Lord Chief Justice has commented on the abuse of photographs as a preliminary to identification. The essayist takes the imaginary example of a passenger dashing hurriedly one night into the last up train leaving a local railway station. Jones, the porter, is subsequently asked to identify the man. The newspapers next day report a murder. The wanted man is rumoured to have got away by the last train to London; presently it is said that a young and well-dressed man who travelled by that train has been arrested. Jones attends the identification parade with a memory which blends genuine

[1] Gorrie *v.* Smith, THE LANCET, Nov. 7th, p. 990.

[2] Mistaken Identity. By Clifford Sully. London: Longmans, Green and Co. 1924. Pp. 15. 6*d*.

(and perhaps inaccurate) recollections with items read or heard. If confronted with the arrested man, Jones may be predisposed to believe that the man he remembers is the man he sees; else why would he be there? Even if photographs have not been displayed beforehand, other forces of suggestion are at work. Though himself smartly dressed, the man may be put up amongst a number of ill-dressed navvies (as was alleged in Stinie Morrison's case). An involuntary self-consciousness may betray the accused man, or some action of his companions may tell a tale. The essay under review makes various proposals. Since it is the first identification that counts (subsequent re-identification being merely formal), Jones might be put on oath to make him more consciously careful; or he might be specially warned of the difference between recognising a person previously seen and spotting a probable criminal. There might even be two or more identification parades, the arrested man being absent from the first or second. These and other observations in Mr. Sully's essay were well worth making. Official complacency has under-estimated the effect of suggestibility. It will be interesting to see (if they are not regarded as confidential) the new regulations which the Home Secretary has undertaken to make upon the subject of identifications.

AMERICAN PUBLIC HEALTH ASSOCIATION:

ANNUAL MEETING.

(FROM OUR OWN CORRESPONDENT.)

THE fifty-fourth annual meeting of the American Public Health Association, held in St. Louis, Mo., was probably the most successful in its history, the registered delegates numbering 911. The epidemic of typhoid fever last winter that was traced to polluted oysters resulted in several papers on

Oyster Sanitation.

These were read to a joint session of the Sections on Public Health Administration, Laboratories, Sanitary Engineering, and Food and Drugs. Drs. Charles Krumwiede and William H. Park, of the New York City laboratories, described observations with oysters that they had contaminated artificially (1) with cultures of typhoid, and (2) with stools from typhoid carriers. *B. typhosus* was found in the liquor and bodies after 49 days storage—the longest period tested, and in excess of the maximum period of storage that is found under actual trade conditions. The changing of oysters to fresh sea-water has a marked effect in diminishing the number of *B. typhosus;* three such changes eliminate 99 per cent. However, even after 18 changes during 24 days *B. typhosus* was isolated. When chlorinated water is used the effect is still more marked. Yet four successive treatments failed to eliminate all *B. typhosus* from the contaminated oysters. The conclusion drawn was that the safeguarding of the oyster-supply must rest on preventing contamination of the beds rather than on treatment of the oysters by existing methods of purification.

Bacteriophage in Surface Waters.

Prof. Lloyd Arnold, of the Loyala University School of Medicine, discussed the significance of bacteriophage in surface waters. Its concentration was found to vary directly with the degree of sewage pollution. Prof. Arnold agreed with other observers that since bacteria are not growing under these conditions there was no autolysis and no speeding-up of the process of purification due to bacteriophage. On the other hand, bacteriophage ingested with an infective dose of typhoid bacilli was liable to cause autolysis of the first cultures, and unless (or until) a resistant strain was developed the cultivation of the typhoid bacilli was prevented. Experimental evidence was presented in support of these conclusions.

In the Section on Epidemiology important papers were read by Prof. E. O. Jordan on influenza, and Dr. Abraham Zingher on the prevention, control, and specific treatment of diphtheria, scarlet fever, and measles.

Perhaps the most important item of business was the creation of a committee on dairy products. Milk control has still many controversial aspects, and it is hoped that a committee representing the sections of Public Health Administration, Sanitary Engineering, Food and Drugs, and Child Hygiene will be able to furnish an important consensus of opinion on some of the disputed doctrines.

A resolution was passed urging the more effective centralisation of federal health work under the direction of a competent trained official. The resolution is to be presented to President Coolidge by a committee of five.

Officers Elected.

As President for the ensuing year the governing council elected Prof. C. E. A. Winslow, of Yale, who was for some time in charge of the medical work of the League of Red Cross Societies at Geneva, Switzerland, and has been indefatigable both in teaching and research in this country. Dr. John A. Amyot, Deputy Minister of Health of the Dominion of Canada, was elected first vice-president. Next year the meeting is to be held in Buffalo, where the strength of the Canadian representation should be even more satisfactory that it has been this year at St. Louis.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Campaign against Venereal Diseases.

ALTHOUGH State aid for the fight against venereal diseases in the new provinces of Roumania ceased on July 1st of this year, because the Ministry of Finance failed to appropriate the necessary funds, the campaign will continue with the vigour that has characterised the work during the last three years. As the Supreme Sanitary Board set aside a considerable sum for this important phase of public health service for the current biennium, the division of social hygiene will be able to carry on for a time. Owing to the uncertainty of continued financial aid, the eight venereal dispensaries and clinics now operating in Transilvania, Bukovina, and Bessarabia slowed up somewhat during the last few months. An agent of the department is making the round of these clinics with the good news that the usual funds will be forthcoming from the State. The message is proving very stimulating.

Proposed War on Rats in the Roumanian Ports.

A proposed amendment to the building orders, now pending before the Board of Public Sanitation, would make compulsory the rat-proofing of all buildings within 600 ft. of the water-front in all the port cities, such as Braila, Constanza, Galatz, and Giurgiu. According to the estimate of the port sanitary officers there are several million rats in these cities, the property loss caused by them annually runs into millions of lei, and the rats are a menace as carriers of bubonic plague. The new measure provides that no certificate for occupancy of any structure within 200 metres of the water-front shall be issued unless its foundation walls are constructed of concrete or similar material and covered with wire mesh. All windows and other openings must be protected with wire screens, and windows and doors must be arranged to permit fumigation with hydrocyanic gas.

Pregnancy in Tuberculous Women.

At a recent meeting of the Medical Society in Jasy Dr. Rosianu gave a summary of the views held at present on the question of pregnancy in tuberculous women. If pregnancy has taken place the woman should be kept under careful medical observation, and if the tuberculous disease grows worse, abortion should be strongly recommended. During the later months of pregnancy the induction of premature labour does not offer any advantage over labour at full term, and is fraught with risk for a tuberculous patient. Moreover, as a tuberculous mother may give birth to a healthy child with fair chances of good health later on, it would be unfair to sacrifice needlessly the life of an infant. Dr. Rosianu does not believe in making a routine of interrupting the pregnancy, as advocated by Maragliano and Hamburger.

Phototherapy in Rachitis.

Dr. Ramniceanu reports the results of ultra-violet treatment made with special arc lamps in 42 cases of rachitis. The patients ranged from 1 to 7 years of age. Every month comparative rontgenograms of the epiphyses of the right forearm were made on four children. In all cases that could be thus controlled there was an undoubted improvement in the clinical picture; in most cases a complete cure was effected. At first the treatment was applied every second day, but of late he has given daily treatments. He begins with five minutes each to the abdomen and back at one sitting. The time is lengthened by two minutes at each sitting until 15 minutes each is reached. No ill-effects following the treatment were noted. No changes in diet were ordered and no medication was employed. The number of sittings was usually from 40 to 60. The rontgenograms established the fact that the bones were becoming harder and firmer. The initial softness of the bones should, of course, be taken advantage of to straighten curvatures and correct deformities, while irradiation is continued, so that when the bones become firm they may be in the corrected position.

Gastro-intestinal Disorders in Albania.

There is an alarming increase of gastro-intestinal disorders in Albania; thousands of working men are unemployed, and are compelled to live on a semi-starvation diet. The sanitary conditions of the bakeries are very unsatisfactory; the bread is bitter and made of inferior flour (chiefly maize) in a primitive manner. Another great source of gastro-intestinal disease is the enormous consumption of decayed vegetables, raw or in a half-cooked condition, and dried fruit, chiefly prunes, in partly decomposed state. The cases of gastro-intestinal disorders are for the most part mild, and recovery takes place without complication; only a few fatal cases have as yet been reported.

DONATIONS AND BEQUESTS.—The Liverpool Hospital Sunday Fund this year—the fifty-fifth annual collection—amounted to £7752, being £413 more than the amount subscribed last year.—Princess Beatrice has given £105 to start a £15,000 fund for the renovation of the Royal Isle of Wight County Hospital.—Lady Violet Charlotte Julia Maria Watt, Brighton, left property of the value of £17,825. She left £500 each to the Royal Sussex County Hospital, the Alexandra Hospital for Sick Children, Brighton, the Throat and Ear Hospital, the Hospital for Women, Brighton, the Brighton, Hove, and Preston Dispensary, and £250 to Our Dumb Friends' League, and the residue of the property to her executor for such charitable purposes as he may select.—Mr. David Levy, Brixton, left £16,440. After various bequests he left the residue of the property in trust for his wife for life, and then to King Edward's Hospital Fund for London.—An anonymous donor has given £1000 to Crickhowell Memorial Hospital in commemoration of the visit of the Prince of Wales to Glenark Park, Crickhowell.—Mr. John David Miller, Clifton, Bristol, left £500 each to the Bristol Royal Infirmary and the Bristol General Hospital; £250 to Muller's Orphanages, Ashley Down, Bristol; and £150 each to the Bristol Eye Hospital and the Bristol Hospital for Sick Women and Children.

Correspondence.

"Audi alteram partem."

REPRESENTATION OF MEMBERS ON THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—I gather from the President's remarks at the annual meeting of Fellows and Members, held last week, that the Council of the College is to consider further the question of the representation of members on that body. Since that meeting, I have had before me the information regarding the history of this movement, which was put before the President by a deputation of the Society of Members of the College, and I am astounded to find that the right of representation on the College Council originally existed and was taken away from them, as I understand, surreptitiously and illegally, about half a century ago by the then Fellows.

In these circumstances, it is amazing to think that a body of gentlemen of the calibre of those who form the Council, and among whom, at the present time, I am proud to reckon many friends, could refuse to rectify such a gross injustice to the Members of the College, and one which has continued for over such a long period. Although the Society of Members have been the movers in this matter, the responsibility of the Council exists to far beyond their limited membership. Though I am not a member of this Society, I consider that the Council owes a sacred duty to the body corporate of the College to put this matter right. I had the pleasure of hearing Dr. Haden Guest's address, and I think he made out a case which is beyond dispute. The Council now has the opportunity of rectifying the injustice of its predecessors, and I hope that it will proceed to do so quickly.

Should the Council of the College refuse to do this, it seems to me that the logical course for it to pursue, in seeking a new charter, would be to have the members of the College degraded into a body of licentiates, such as exists in the sister college. I do not suppose for a moment that it would be allowed to do that; but to my mind it is the only logical alternative to the retention of the status of membership. I am quite sure that it would be to the advantage of the College and, indirectly, of the public, whom it serves, that it should agree to receive one or two members on its Governing Board. It appears to me to be very unfair that I, as a member of a university, should have a voice in the government of that university and a Parliamentary vote for its Member, while thousands of members of the College should not even have one representative on its College Council.

I am, Sir, yours faithfully,

LEWIS G. GLOVER, M.D., M.R.C.S., L.R.C.P.

Nov. 26th, 1925.

*** The subject is dealt with in another column.—ED. L.

THE TROPHOBLASTIC HYPOTHESIS OF CANCER.

To the Editor of THE LANCET.

SIR,—It is surely unreasonable of anyone to expect to find historical references to other theories in an address summarising the work of many years. After what Dr. Murray has written, however, concerning my presumed want of knowledge on this matter, justice demands that I comment severely upon his own ignorance of the literature in respect of a previous publication of mine in THE LANCET [1] in which, when dealing with the importance of chorion epithelioma in relation to certain aspects of the ætiology of cancer, I acknowledged that, though I had arrived at a similar conclusion independently, I subsequently discovered

[1] THE LANCET, 1924, i., 267.

that I had been anticipated in this matter by Dr. Adami in a discussion on Cancer at the Chelsea Clinical Society in March, 1902 [2]—that is, prior to Dr. John Beard's publication [3] to which Dr. Murray has referred. Of Dr. Adami's paper Dr. Murray presumably is also ignorant.

We owe to Marchand and a group of German workers, and not to Beard, the demonstration that chorion epithelioma is a malignant growth sui generis derived from the embryonic trophoblast. But all this is common knowledge, and it is hardly likely that anyone to-day would claim it as original! If Dr. Murray will read, and read carefully, my address he will see that I state very definitely that our working hypothesis is based on known facts, as it should be. The difference between our views and Beard's confused ideas is striking. Beard regarded the fertilised ovum as producing an alternate asexual generation; on it is developed an individual, which for clearness we may term the blastula. From this there was now unfolded and developed the sexual individual—the embryo. His theory was that the asexual part (the chorion) might continue to exist after the sexual product had been destroyed or removed, and from this it followed that secondary growths in the lungs and elsewhere were to be considered asexual generations. Beard sums up his hypothesis in the last paragraph of the paper mentioned in the following words:—

> Granted the facts of the origin, migrations, and history of the germ-cells of vertebrates, and assuming the course of the life-cycle to be that previously indicated, by hypothesis cancer is derived from vagrant primary germ-cells, which, instead of forming a more or less complete embryo or embryoma, skip this and give rise to a larva or phorozoon of indefinite unrestricted powers of growth.

Adami and I have had no such ideas. Our conception has been that the chorionic epithelium grows and penetrates the uterine tissue in performance of a special function—that is, to secure nourishment for itself and the growing embryo; that through it foodstuffs are absorbed from the maternal blood, and the other interchanges are made; that if the fœtus die or become aborted this normal function ceases to be required, and that now, to employ Adami's expression, the habit of work being interrupted, the habit of growth may continue, or as I expressed it, the embryonic restraint being removed the chorionic epithelium may multiply and become excessively malignant. This is totally different from John Beard's hypothesis, which I agree could not be fruitful.

With this statement, which should have been entirely unnecessary, I must leave your readers to judge Dr. Murray's letter. Speaking not only for myself but also for the whole staff of the Liverpool Cancer Research Fund, I wish to say that we most cordially invite criticism of our work on its scientific merits. We do not want opinions, pious or impious; we, like all other honest workers, want the truth.

I am, Sir, yours faithfully,

Liverpool, Nov. 30th, 1925. W. BLAIR BELL.

PS.—Will you allow me to say that the following paragraph was omitted by accident from my Toronto address in THE LANCET of Nov. 14th, but will appear in the reprints. It should follow the first paragraph in the left-hand column on p. 1005. Those interested will be able to read it into the rest of the argument:—

"Here it seems proper to call attention to a point of interest that affords considerable support to the explanations I have given of certain pathological phenomena; this obvious point appears to have escaped description, and even notice, at the hands of pathologists—at least, I am not aware of any statement on the matter. It is this: chorion epithelioma—the most malignant of malignant diseases—is not a dedifferentiated growth as is every other malignant neoplasm; it is a simple hyperplasia of the chorionic epithelial elements. Dedifferentiation cannot occur for the chorionic epithelium is normally malignant, and is itself the ancestral type."

[2] Clinical Journal, June 18th, 1902.
[3] THE LANCET, 1902, i., 1758.

PROPHYLAXIS OF THE COMMON COLD.

To the Editor of THE LANCET.

SIR,—I have read Dr. Simey's address with great interest. I would like to put forward the suggestion that a common source of infection is the dangerous practice of compelling adolescents to spend an hour or more in all weathers watching matches. The idea that it is disloyal to the school not to appear to enjoy doing so compels many boys and girls to stand on wet ground in cold winds, thus lowering their vitality and resistance to infection. It is not necessary to go back to the classic experiment which produced anthrax in fowls to realise that it must be harmful in human beings. Would it be possible for medical officers of schools to arrange that only those who desire to watch matches should do so, and for the rest of the school to be occupied in keeping themselves warm, during the winter months, at any rate?

I am, Sir, yours faithfully,

STELLA CHURCHILL.

Chiswick, W., Nov. 24th, 1925.

MALARIA AS A THERAPEUTIC AGENT.

To the Editor of THE LANCET.

SIR,—In connexion with the malaria treatment of general paralysis, it is interesting to learn from a recent article by Dr. Cabanès [1] that in the Middle Ages it was believed that quartan ague cured epilepsy. Dr. Cabanès quotes Louis XI. as begging the Prior of Notre-Dame des Salles, at Bourges, to pray "incessamment Dieu et Notre-Dame des Salles pour moy, à ce que leur plaisir soit de m'envoyer la fièvre quarte, car j'ay une maladie dont les physiciens disent que je ne puis être guéry sans l'avoir." According to Dr. Cabanès, Louis XI. was an epileptic. It appears he also suffered from leprosy, and the fact throws light on the king's strange behaviour. Notwithstanding such drawbacks, he yet managed to weld a disunited country into a kingdom.

I am, Sir, yours faithfully,

London, W., Nov. 29th, 1925. GEORGE PERNET.

PRECANCEROUS STATES.

To the Editor of THE LANCET.

SIR,—My experience of tropical granulomata in Calcutta may throw light, however slight, on "precancerous" states in general. Tropical granulomata are frequently subjected to irritation to such degrees that it is remarkable they do not undergo malignant changes more often than they do. The histological changes observed during the transition of granulomata to malignancy are interesting. There is a varying degree of leucocytic infiltration with a relative preponderance of lymphocytes. This may be due to irritation caused by a specific virus or some changes produced in the invading epithelium. The epithelial cells proliferate and extend both in the longitudinal and vertical planes in the granulation tissue, its proliferation towards the periphery being at first slow. Side by side, there is connective tissue reaction. The perilymphatic and endolymphatic distribution of cells, the epithelial proliferation and invasion and cellular reaction vary according to the type of granuloma, the irritation, and the stage of transformation. In a few cases in which a malignantly transformed granuloma tends to revert to non-malignancy, the connective tissue proliferation seems to result in fibrosis which pervade the growth, the rate and extent of epithelial proliferation become reduced and the cells themselves become more and more normal in character.

I am, Sir, yours faithfully,

K. K. CHATTERJI, F.R.C.S.I.

Southwell-gardens, London, S.W., Nov. 30th, 1925.

[1] Mercure de France, May 15th, 1925, p. 197.

POISONS IN THE HOME.

To the Editor of THE LANCET.

SIR,—In reference to the useful annotation with this title which appeared in your issue of Nov. 7th may I ask on what grounds it is stated that many essential oils possessing extremely high carbolic acid coefficients are of relatively small toxicity to human beings? As examples, the writer mentions the oils of origanum and of thyme. I am aware that both of these have high carbolic acid coefficients, but where can I find the evidence that they are less poisonous than the higher homologues of phenol?

I am, Sir, yours faithfully,

HENRY KENWOOD,

Nov. 28th, 1925. M.O.H., Stoke Newington.

*** The relatively low toxicity of essential oils may be deduced partly from such direct evidence as that the B.P. gives the dose of sandal-wood oil as 0·3–1·8 g., and the U.S. Dispensatory that of thyme oil as 0·2–0·3 g., compared with phenol, 0·06–0·2 g., and partly from the absence of any records of accidental poisoning.—ED. L.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—My attention has been called to the issuing of a leaflet announcing a lecture which I was recently invited to give to the members of the Young Men's Christian Association at their hall in Aldersgate-street. On hearing of it I at once telephoned to the secretary that no further distribution should take place. I need hardly say it was issued without my knowledge.

I am, Sir, yours faithfully,

JAMES DUNDAS-GRANT.

London, W., November, 1925.

POLYCYTHÆMIA RUBRA RELIEVED BY X RAY TREATMENT.

To the Editor of THE LANCET.

SIR,—The case described by Dr. S. W. Patterson in THE LANCET for Nov. 28th (p. 1112) is of especial interest both on account of the question of diagnosis and on account of the good result obtained by treatment. A good result of nine months' duration, like that described, seems to me almost incompatible with a diagnosis of true *splenomegalic* polycythæmia rubra, that is to say, the "Vaquez-Osler syndrome," or "erythræmia." I had the opportunity of seeing the patient twice myself before Dr. Patterson saw her and regarded the case as one of "hypertonia polycythæmica," such as those to which F. Geisböck drew attention in 1904, and as I have explained,[1] I believe that such cases are examples of secondary polycythæmia, connected in some way with the high blood pressure of early stages of granular kidney, or with primary hyperpiesia without definite signs of organic renal disease. On both occasions when I saw the patient the spleen could not be felt, and Dr. Patterson admits it was only just palpable when he first saw the case and soon was not palpable at all. Moreover, a high systolic blood pressure of 170–204 mm. Hg has scarcely ever been made out in a true case of splenomegalic polycythæmia. I have paid especial attention to this, as in 1904, with Dr. J. H. Watson,[2] I made out experimentally with the blood of horses that the so-called blood-viscosity (quite distinct from the *true* viscosity of the blood-plasma or blood-serum) depended almost entirely on the richness in erythrocytes. Since then I have been forced to admit that in splenomegalic polycythæmia there must be some compensatory dilatation of the capillaries which prevents the blood pressure rising[3]; indeed, in many typical cases with an erythrocyte count of about 10 millions to the cubic centimetre of blood, the brachial systolic blood pressure is only about 120–130 mm. Hg.

On the other hand, the syndrome "hypertonia polycythæmica" may, I believe, represent merely a phase or episode in the course of a case of high blood pressure, the polycythæmia disappearing after a time, though the high blood pressure persists or increases. The point on which Dr. Patterson is to be especially congratulated, seems to me that the high blood pressure in his case practically disappeared *as well as the polycythæmia*. I shall certainly endeavour to have similar X ray treatment cautiously tried in cases of hyperpiesia, at all events, in cases associated with polycythæmia. Amongst the Hebrews from the East End of London that come as out-patients or in-patients to the German Hospital are many typical examples of hyperpiesia.

I am, Sir, yours faithfully,

London, W., Nov. 30th, 1925. P. PARKES WEBER.

[1] Proc. Roy. Soc. Med., Clin. Sect., 1925, xviii., 37.
[2] Folia Hæmatologica, 1904, i., 392.

NASAL LAVAGE AND MIDDLE-EAR INFLAMMATION.

To the Editor of THE LANCET.

SIR,—I hope that Mr. Arthur Cheatle's timely communication (THE LANCET, Nov. 28th, p. 1140) upon the dangers of indiscriminate nasal lavage will be assimilated both by the Ministry of Health and by practitioners generally. May I suggest that the employment of a suitable antiseptic powder as a "snuff" is at least harmless to the ears, and is efficacious in relieving obstruction in any case which does not require surgical interference. I am convinced from experience that the use of the fluid nasal douche results in a noticeable increase in secretion and in the progress to a chronic hypertrophic condition, especially so in the recurrent polypoid growths of everyday practice. Moreover, the treatment by a "snuff" is very conveniently carried out, and in the case of children it certainly helps in the teaching of correct nasal breathing.

I am, Sir, yours faithfully,

Manchester, Dec. 1st, 1925. WILLIAM WILSON.

OPERATIONS ON GERM CARRIERS.

To the Editor of THE LANCET.

SIR,—Something more might have been said in your leading article last week in regard to the proposal to render germ-carriers non-infectious by operation. There are two points wherein the case of a healthy carrier treated under compulsion or under strong moral pressure would differ from the normal case. When a practitioner operates ordinarily, the law gives him protection (except in the case of gross carelessness, ignorance, or inattention), first, because he is endeavouring to improve or conserve the bodily health of his patient; and, secondly, because the patient's consent has either been expressly given or can at any rate be tacitly implied. Operation upon a healthy carrier would be not so much for the improvement or conservation of his health as for the safety of the health of others. And if the operation were conducted as a statutory duty rather than at the express or implied invitation of the patient, there would be an absence of the professional protection which the tacit or explicit consent of the patient ordinarily creates. Distant though it may be, this is an aspect of the matter which should be borne in mind.

I am, Sir, yours faithfully,

LEX.

[3] Brit. Med. Jour., 1925, i., 1108.

Obituary.

RICHARD DENISON PEDLEY, F.R.C.S. EDIN., M.R.C.S. ENG., L.D.S.

Mr. Richard Denison Pedley, consulting dental surgeon to the Evelina Hospital for Children and to Dr. Barnardo's Homes, died on Nov. 25th at India House, Addiscombe, at the age of 68. He received his professional training at St. Thomas's Hospital, where he became demonstrator in dental surgery, and at the Dental Hospital where he later was assistant dental surgeon. In 1883 he obtained the M.R.C.S. Eng., and the following year the Licence in Dental Surgery. In 1887 he became F.R.C.S. Edin. by examination, and eight years later published his first book with the title of the "Diseases of Children's Teeth: their Prevention and Treatment." At this time he was dental surgeon to the Evelina Hospital for Sick Children, and the experience which he had gained by devoting his whole time to the subject of his specialty was embodied in the treatise and made available for medical practitioners and students. This supplied a want of the time, for it frequently happened that the doctor was called upon to take the place of a dentist without having had the necessary training. In 1898 and 1908, respectively, Mr. Pedley published "Hygiene of the Mouth," and jointly with Mr. F. Harrison, "Our Teeth," two books of a more general character. In 1904 he wrote for THE LANCET (1904, ii., 1207) an article designed to direct attention to the neglect by the medical profession of dental disease, predicting that public opinion among other outside forces would compel attention to be paid to this matter. His suggested remedy for this neglect was that medical students should be warned that in all final examinations an occasional question would be put on the causation, effects, and treatment of dental caries. If this were done, he said, "In ten years' time the 13,000 general practitioners who have registered will be well aware of the prevalence of dental disease, which, if they cannot cure, they will do much to prevent." We have travelled far since Mr. Pedley wrote these words. It must have been a gratification to him to have lived to a time when practitioners do attach importance to dental disease and to feel that his influence may have contributed largely to this change of attitude. Mr. Pedley was a past President of the School Dentists Society, a Fellow of the Royal Society of Medicine, and a Fellow of the Royal Society of Arts.

ELIJAH BAXTER FORMAN, M.D. BRUX., M.R.C.P. LOND., J.P.

Dr. E. B. Forman, who died on Nov. 25th at his residence, Chalfont St. Giles, had reached the advanced age of 86 years. He was for 20 years a member of the London County Council, representing North Hackney and South Kensington, and later becoming an alderman. Among the offices he had filled were the vice-chairmanship of the Education Committee and the chairmanship of the Public Health and Midwives Committees; in 1906 he was deputy chairman of the Council.

The son of Mr. E. Forman, of Derby, he was educated privately, entering Guy's Hospital where he gained scholarships in medicine and wrote a prize essay on Bright's disease. In 1863 he qualified with the M.R.C.S. Eng. and L.R.C.P. Lond., and after graduating at Brussels in 1877 obtained the M.R.C.P. in 1889. He started practice in Stoke Newington, moving after a few years to South Kensington, where his whole active professional life was spent. He took an interest from the first in municipal hygiene and had prevision of medical progress in the direction of prevention as distinct from cure. An address on "Medical London," which he delivered at the South Place Institute in 1899, and published in our columns, showed a wide grasp of Poor-law and sanitary administration. Everyone, he said, is concerned in a movement the object of which is to prevent disease and prolong life. He advocated simplification of health administration, and the adoption of a uniform coherent system which only centralisation could bring about. Happily he lived long enough to see the realisation of his ideal in the Ministry of Health.

JOHN ELSDALE MOLSON, M.D., B.CH. CAMB.

THE death took place on Nov. 28th at Goring Hall, Worthing, of John Elsdale Molson, who for some six years represented the Gainsborough division of Lincolnshire in the House of Commons. The son of Samuel Elsdale Molson, he was born on August 6th, 1863, at Montreal, and received his early education in England at Cheltenham College, afterwards entering Cambridge University and becoming a student at Middlesex Hospital Medical School. In 1889 he qualified with the L.S.A., and in the following year took the Conjoint diplomas of the Royal Colleges. After holding a house appointment at Middlesex Hospital, in 1891 he graduated in medicine and surgery at Cambridge University and proceeded to the M.D. degree four years later. While in practice at Chelmsford he was medical adviser to the Convent of the Holy Sepulchre. Later as Surgeon-Major in the 4th Batt. of the Royal Sussex Territorial Regiment he served during the war both in this country and in Egypt, and he entered Parliament in 1918. After retiring from practice he was a justice of the peace for West Sussex.

Dr. Molson married Mary, daughter of Dr. A. E. Leeson, by whom he had three sons and one daughter.

CHARLES EWBANK LANSDOWN, M.R.C.S. ENG., L.R.C.P. LOND.

Dr. Charles Ewbank Lansdown, one of the best-known medical practitioners in the Midlands, passed away with tragic suddenness on Nov. 24th at Cheltenham. The day before his death he attended his patients as usual and seemed in the best of health. Early on the day of his death he complained of pain, and suddenly fell down and expired. A native of Plymouth, he was a student at St. Mary's Hospital, London, and after qualifying in 1891 he was senior resident medical officer of the London Lock Hospital, honorary house surgeon at St. Mary's Hospital, and resident medical officer at Horton Infirmary, Banbury. He settled in Cheltenham and took over the practice of his deceased half-brother. He was surgeon to the Children's Hospital in Cheltenham. He was an enthusiastic Churchman and Freemason. He leaves a widow, a daughter of Dr. Thos. Savage, of Birmingham, one daughter, and two sons, to whom we extend our sympathy.

THE LATE DR. J. F. S. HAY.—A New Zealand correspondent states that the funeral of Dr. Joseph Frank Strong Hay, M.B., C.M. Aberd., formerly Inspector-General of Mental Hospitals in New Zealand, whose death was announced in THE LANCET of Sept. 19th (p. 586), took place in St. Paul's Pro-Cathedral, Wellington, where there was a large attendance of representatives from all sections of the community. Dr. Hay was born in Lucknow, India, and graduated in medicine at Aberdeen University. After some experience of mental work in Scotland he went to New Zealand in 1897, and on the death of Dr. Duncan McGregor in 1907 he was appointed Inspector-General of Mental Hospitals. In 1923 he married Mary Stuart, daughter of the late Right Hon. R. J. Seddon.

MANCHESTER EAR HOSPITAL.—This hospital draws its patients from an extraordinarily wide area, even from very distant towns, but the financial support from many of these areas comprising 224 towns, is far from adequate and the financial year finishes with an adverse bank balance. During the past year there were 5580 outdoor patients and 525 in-patients. The number of operations was 995. There is a waiting-list of over 900 patients.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. (retd.) E. D. Rutherford to be Surg. Capt. (retd.).

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Nicholson retires, receiving a gratuity.

TERRITORIAL ARMY.

Capts. F. W. Goodbody and J. B. Foubister, having attained the age limit, are retired and retain their rank.

Capt. J. McCulloch (late R.A.M.C.) to be Capt.

Capt. J. W. Macfarlane resigns his commn. and retains his rank.

ROYAL AIR FORCE.

H. I. Clapperton (temp. Lt., Dental Surgeon, General List, Army) is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the relinquishment of their temporary commissions by Capts. Manchar Lal Bhagat and Keshav Ganesh Mohile, who are permitted to retain the rank of Capt.

On return from leave the following officers are posted as indicated: Lt.-Col. R. F. Baird, Civil Surgeon, Allahabad; Lt.-Col. E. C. Hepper, Civil Surgeon, Bareilly; Lt.-Col. H. Ross (late Secretary, Indian Red Cross Society), Civil Surgeon, Aligarh; Lt.-Col. C. A. Sprawson, Principal and Professor of Medicine, King George's Medical College, University of Lucknow, in relief of Maj. G. T. Burke, who has been appointed Civil Surgeon, Saharanpur; and Maj. P. B. Mills, Civil Surgeon, Shahjahonpur. Lt.-Col. H. P. Cook has been transferred as Civil Surgeon from Allahabad to Fyzabad, and Maj. R. S. Townsend, Civil Surgeon, from Bareilly to Gorakpur. Maj. C. G. Howlett, Civil Surgeon of Champaran, has been granted leave.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 25TH.

Milk and Dairies Regulations.

Mr. BARNES asked the Minister of Health whether, having regard to the fact that the Milk and Dairies Act of 1915 had been in operation since Sept. 1st last, he was now able to state the date on which the regulations to be operated under this Act would be published; and whether in view of the scope of the sections of the Act under which it was proposed to issue regulations, he would arrange for a discussion in the House before putting the regulations into operation.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is at present consulting the associations of local authorities with regard to a draft Milk and Dairies Order which has been prepared under the Act of 1915 and he hopes that the draft will be ready for publication about the end of the year. When the Order has been made it will be laid before the House and an address may be presented to His Majesty praying that the Order be annulled. A discussion could therefore take place on the Order on a motion for such an address.

Deaths from Lead Poisoning.

Mr. DUCKWORTH asked the Home Secretary if he was aware of the statements that deaths from lead poisoning were on the increase among lead workers in the pottery trade, and that according to the latest statistics potters between the ages of 35 and 45 had the highest death-rate in Great Britain; and whether he had any information as to the effectiveness or otherwise of the new lead and dust regulations.—Mr. G. LOCKER-LAMPSON (Under Secretary for Home Affairs) replied: There has been a small increase during the last few years in the deaths from lead poisoning in the pottery trade, but this cannot be taken as any indication of the present conditions. The records show that in the great majority of cases the deceased had been employed in the industry for many years before the Regulations of 1913 came into force. There can be no doubt, I think, if one looks at the total number of cases, that the 1913 Regulations have been effective. Whereas during the six years 1907–1912 the average number of cases was 90, the average for the last six years 1919–1924 was just under 36. It is significant also that in the fatal cases there has been a substantial rise in the average age of the deceased. The statement that potters between the ages of 35 and 45 have the highest death-rate in Great Britain is, I believe, incorrect.

THURSDAY, NOV. 26TH.

Danger to School-children.

Mr. SCURR asked the Home Secretary whether his attention had been drawn to the danger to the public, especially children, of Vallance-road, Whitechapel, particularly where a school, a feeding centre, and a hospital converge; and whether he would take steps to arrange for better regulation of the heavy traffic by the police, especially when the children were going to and from the school and the feeding centre.—Mr. LOCKER-LAMPSON replied: I am informed by the Commissioner of Police that the traffic in this street, as elsewhere, has greatly increased in recent years. Arrangements are made to secure that, as far as possible, police officers shall be on duty to supervise dangerous crossings in the vicinity of schools when children are entering or leaving, but owing to the large number of schools it is not always possible to spare constables for this purpose, having regard to the other duties of the police. In a densely populated neighbourhood where there are numerous children, and very few places where they can play, except in the streets, it is impossible for the police to prevent accidents occurring, and it does not appear that the posting of a constable at the spot indicated would have prevented such accidents as have unfortunately occurred of late.

The Causes of Epithelioma.

Mr. ROBINSON asked the Home Secretary whether the Departmental Committee on the association of the occupation of the mule minder in the cotton trade with epithelioma had yet reported; and whether any action was proposed to minimise the incidence of this disease and protect the workers.—Mr. LOCKER-LAMPSON replied: The committee have not yet reported, but I am informed by the chairman that they hope to do so early in the New Year. As regards the latter part of the question, I cannot anticipate the report, but any recommendations of the committee will be taken into immediate consideration.

Deaths from Insect Bites.

Mr. HERBERT WILLIAMS asked the Minister of Health the number of deaths from insect bites in this country during the six months ending Sept. 30th this year, and also the corresponding figures for last year.—Mr. N. CHAMBERLAIN replied: There were nine deaths from insect bites in the six months ending on Sept. 30th, 1924. The corresponding figure for this year is not yet finally ascertainable.

Voluntary Hospitals Report.

Major GLYN asked the Minister of Health whether he had considered the Report of the Voluntary Hospitals Commission; and whether it was proposed to provide public funds for hospital extension on the lines recommended.—Mr. N. CHAMBERLAIN replied: Yes, Sir. While I fully appreciate the strength of the case of additional hospital beds I regret that in the present urgent need for public economy I could not find myself able to recommend the provision of public funds to assist even in so laudable an object.

Sanitation in Kentish Hopfields.

Colonel DAY asked the Minister of Health if he was aware of the confusion and consequent suffering of hop-pickers in Kent during the recent hopping season; and would he consider legislation on the lines of the Factory Acts in order to compel owners of hopfields to provide the accommodation required by modern ideas of humanity.—Mr. BRIANT asked the Minister of Health if he was aware that the sanitary condition of many of the hopfields during last season was deplorable; what steps his department was taking to obtain a permanent improvement in the general conditions; and would he appoint women inspectors to be on duty next season during the whole of the time that hop-picking continues. Mr. Briant also asked the Minister of Health if inspectors from his department had visited the hopfields during the past season; and, if so, if the report made could be issued for the information of the House.—Mr. N. CHAMBERLAIN replied: I am aware that the conditions in many camps in the Kent and Sussex hopfields are unsatisfactory, and my department is working in close coöperation with the Ministry of Agriculture and Fisheries with a view to securing improvement. The administration of the law and by-laws relating to this matter is a duty devolving in the first instance on the local authorities, and their efforts, supported by local voluntary workers, have already effected a noteworthy improvement, but I have in preparation new model by-laws which the local authorities will presently be asked to adopt. In the last two years numerous visits have been made by

inspectors, both of my department and that of my right hon. friend, including a lady inspector of the Ministry of Agriculture, and I propose to circulate among the local authorities concerned a report recently prepared by one of my medical officers dealing with those hopfields in Kent and Sussex which have been inspected. I shall be happy to send a copy to the hon. Members.

Poor-law Reform.

Mr. GEOFFREY PETO asked the Minister of Health whether he would issue to Members the outline of his proposals on the subject of Poor-law reform, which had already been issued to the County Councils' Association.—Sir JOHN MARRIOTT asked the Minister of Health whether, as his provisional suggestions or proposals for the reform of the Poor-law had been confidentially communicated to the Association of Municipal Corporations and one or more similar bodies, he would say whether they had also been communicated to the Association of Poor Law Unions; and, if not, if he would state the ground for discrimination.—Lieut.-Colonel ACLAND-TROYTE asked the Minister of Health why, when issuing a statement as to his proposed reform of the Poor-law to certain associations, no copy was sent to the Association of Poor-law Unions; and would he issue copies of the statement to Members of Parliament.—Mr. N. CHAMBERLAIN replied: The proposals referred to were preliminary proposals devised as a basis for discussion with the representatives of the local authorities to whom it would be necessary to entrust the powers and duties of boards of guardians on abolition, and I thought that it would probably save time and trouble if I considered the proposals further in the light of such discussion before forwarding them to the Association. I am now advised that some time must elapse before the discussion can take place, and accordingly I propose to send the provisional proposals as they stand to the Association and to certain other bodies interested. In this way the proposals will no doubt become public, and it seems scarcely necessary to issue them specially to Members of Parliament.

Advertisements of Cancer Cures.

Sir JOHN MARRIOTT asked the Minister of Health whether he had received representations from responsible quarters urging him to introduce legislation to deal with advertisements for cancer cures; and what action he proposed to take in a matter which was regarded by the medical profession as urgent.—Mr. N. CHAMBERLAIN replied: I have not received any recent representations, but the matter was fully discussed in the report of the Select Committee on Patent Medicines. The question raised by my hon. friend shall be carefully considered in connexion with any legislation for the control of the traffic in secret remedies.

Vaccination and Sleepy Sickness.

Mr. COMPTON asked the Minister of Health whether he would give instructions to all medical officers receiving notifications of cases of sleepy sickness to inquire whether such cases had at any time undergone vaccination and, in those cases where the operation had been performed, to note the date and result of the last vaccination.—Mr. N. CHAMBERLAIN replied: I will consider this suggestion in connexion with other questions relating to sleepy sickness which are at present engaging my attention.

Research into Animal Diseases.

Mr. FOOT MITCHELL asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps were being taken by his department at the present time in the direction of research into animal diseases.—Sir H. BARNSTON replied: Research into animal diseases in England and Wales is carried on at a number of research institutes and colleges maintained or aided by grants from the Ministry. These include the Institute of Animal Pathology at Cambridge, the Royal Veterinary College, the London School of Hygiene and Tropical Medicine, and the Ministry's Veterinary Laboratory. Advisers in veterinary science are maintained at the University Colleges at Bangor and Cardiff, and at Armstrong College, Newcastle. A special committee had been set up to conduct research into foot-and-mouth disease, and work is being carried on under the direction of this committee at a number of laboratories. The total estimated expenditure on the maintenance of this work in the present financial year is £17,000. In addition grants in aid of capital expenditure totalling £118,650 have recently been sanctioned by the Ministry in respect of the work. Reports on the research organisation set up by the Ministry and on the work of the various bodies concerned will be found in the report on the work of the Intelligence Department of the Ministry for 1921–24 and the First Progress Report of the Foot-and-Mouth Disease Research Committee. These reports are published by and obtainable from H.M. Stationery Office.

MONDAY, NOV. 30TH.

Colonial Medical Director.

Lieut.-Colonel ANGUS MCDONNELL asked the Secretary of State for the Colonies whether the Government had come to any decision as to the appointment of a medical director as a permanent member of the Colonial Office staff for the purpose of coördinating medical research work in the different Crown Colonies.—Mr. AMERY replied: The matter is still under consideration.

The Spahlinger Serum.

Captain BOWYER asked the Comptroller of the Household, as representing the Minister of Agriculture, what steps he was taking to test Mr. Spahlinger's reputed cure for bovine and human tuberculosis, or whether the Ministry was already satisfied as to the efficacy of Mr. Spahlinger's sera.—Sir H. BARNSTON replied: The Ministry has not itself made any test of Mr. Spahlinger's serum, or of any other specific of which the basis is kept secret and not submitted to scientific inquiry. It understands, however, that an investigation into bovine tuberculosis is being undertaken by a committee representative of certain agricultural and professional interests in Cheshire, where tests are being conducted with the coöperation of Mr. Spahlinger.

Infant Mortality at Market Drayton.

Sir CHARLES OMAN asked the Minister of Health what was the rate of infant mortality per 1000 births for Market Drayton (Salop) for the first three quarters of 1925, or, if these figures were not yet available, for the first half-year of 1925.—Mr. N. CHAMBERLAIN replied: In the first two quarters of 1925 there were in the Market Drayton Urban District 52 births and 5 deaths of infants under 1 year of age, equivalent to a rate of 96 per 1000 births. Figures for the third quarter are not yet available.

Deaths from Tuberculosis.

Mr. GROVES asked the Minister of Health the number of persons who died in England and Wales from tuberculosis (all forms) during the years 1914 to 1924.—Mr. N. CHAMBERLAIN replied: The figures asked for are as follows: year 1914, 50,298 deaths; 1915, 54,295; 1916, 53,858; 1917, 55,934; 1918, 58,073; 1919, 46,312; 1920, 42,545; 1921, 42,678; 1922, 42,777; 1923, 40,788; 1924, 41,103; total, 528,661.

Destruction of Condemned Meat.

Colonel DAY asked the Minister of Health whether he was aware that the Eaton Bray Rural District Council, at their meeting on Sept. 12th last, decided to allow the carcass of a cow, deemed to be suffering from tuberculosis, to be boiled; and would he consider legislation with a view to the destruction of all condemned carcasses.—Mr. N. CHAMBERLAIN replied: I am aware of the decision of the rural district council, but I have no reason to suppose that the boiled meat was sold for human consumption. Having regard to the economic value of unsound meat for such industrial purposes as soap-boiling or pig or poultry feeding I should not be prepared to introduce legislation requiring the destruction of all condemned carcasses.

Trained Nurses for National Emergency.

Colonel DAY asked the Minister of Health whether it was contemplated appealing to hospitals and Poor-law institutions to supply a corps of trained nurses from the trained staff of such hospitals and institutions which could be used in case of national emergency.—Mr. N. CHAMBERLAIN replied: No, Sir. Steps are, however, being taken to secure that the additional nursing staff required on mobilisation by the combatant services should be obtained with a minimum of disturbance of the voluntary and Poor-law hospitals.

Arm-to-Arm Vaccination.

Mr. GROVES asked the Minister of Health whether he was aware that it was still the practice of many medical practitioners to employ the arm-to-arm method of vaccination in private practice; and whether, in view of the serious risks attending such practice, he would consider the desirability of making representation to the medical profession on the matter.—Mr. N. CHAMBERLAIN replied: The answer to the first part of the question is in the negative. My information is that comparatively few medical practitioners now employ this method of vaccination and I scarcely think it necessary to make representations to the medical profession on the matter.

DONCASTER INFIRMARY.—The accommodation at this infirmary is so inadequate that patients have had to be temporarily "bedded-down" in the receiving ward, and two children have had to occupy one cot. An extension is being built which will provide 70 extra beds. This will be the third enlargement in 20 years.

Medical News.

UNIVERSITY OF CAMBRIDGE.—There are at present 464 medical students in the University, of whom 157 are in their first year, which is about 30 more than the second- or third-year men. There are 127 in their second year, 122 in their third year, and 58 in the fourth or later year.

UNIVERSITY OF LONDON.—At the examination for the Diploma in Psychological Medicine, held recently, the following two candidates passed, with special knowledge of psychiatry: Edward W. Anderson and George Brown.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.—The next meetings will take place at 5, Old Palace Yard on Dec. 10th at 2 P.M., and 11th at 10.30 A.M.

OLD EPSOMIAN CLUB.—The annual general meeting of this club will be held on Thursday, Dec. 10th, at 6.30 P.M., at the Trocadero Restaurant. It will be followed by the annual dinner at 7.30 P.M.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held at 1, Upper Montague-street, Russell-square, London, on Friday, Dec. 11th, when Dr. Otto May, principal medical officer of the Prudential Assurance Company, will speak on Life Assurance and Tuberculosis.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—Owing to the death of Queen Alexandra the dinner in aid of the National Association for the Prevention of Tuberculosis, which had been arranged for Dec. 9th, has been indefinitely postponed.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, S.E., on Friday, Dec. 11th, at 8.45 P.M., when Mr. Wilfred Trotter will deliver the Purvis Oration on the Surgery of Malignant Disease of the Pharynx.

NEW HEALTH SOCIETY.—A luncheon will be given on Friday, Dec. 11th, at 1 P.M., by the Aldwych Club, at the Connaught Rooms, Great Queen-street, London, W.C., to the founders of this society, when Lord Oxford and Asquith, one of the founders, will deliver an address on National Prosperity and the Nation's Health.

CHILD-STUDY SOCIETY, LONDON.—A meeting of this society will be held at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W., on Dec. 10th, at 6 P.M., when Dr. R. Langdon-Down will speak on the Teaching of Shorthand as Part of a General Education. Chairman, Dr. A. F. Tredgold.

ROYAL SOCIETY.—The anniversary meeting was held on Nov. 30th when the officers proposed by the Council (see THE LANCET, 1925, ii., 1042) were duly elected. Sir Charles Sherrington, the retiring president, called attention to the receipt last year of a generous anonymous bequest of £10,000 which had been used in the investigation of kala-azar in Northern China by Major Patten and Dr. Hindle. A further bequest from the same source had been received this year, amounting to over £28,000. From the fund accruing to the society in 1921 by the bequest of Miss Foulerton, a further research professor had been appointed in the person of Prof. A. V. Hill.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Sir Charles Gordon-Watson will lecture for the Fellowship of Medicine on the Prevention and Correction of Deformity in Tuberculous Joints in the Lecture Hall of the Medical Society of London, 11, Chandos-street, W., on Monday, Dec. 7th, at 5.30 P.M. The lecture is free to members of the medical profession.—The Hampstead General Hospital will hold a 4.30 to 6 P.M. course for the convenience of the general practitioner from Dec. 7th to 19th covering all branches of medicine and surgery.—Beginning also on Dec. 7th is a two weeks' afternoon course in Dermatology at the Hospital for Diseases of the Skin, Blackfriars. Instruction will be given in the out-patient department and venereal clinics will be held twice weekly.—The following are the special courses for January: Medicine, Surgery, and the Specialties at the Prince of Wales's General Hospital; Cardiology at the National Hospital for Diseases of the Heart; Diseases of Children at the Queen's Hospital; Infectious Fevers at the North-Eastern Hospital; Neurology at the West End Hospital for Nervous Diseases; and Psychological Medicine at the Bethlem Royal Hospital.—A copy of each syllabus and the Fellowship general course programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole-street, London, W.C. 1.

HARVEIAN SOCIETY OF LONDON.—A meeting will be held at the Paddington Town Hall, Paddington Green, London, W., at 8.30 P.M., on Dec. 10th, when a paper on the Relationship of Certain Diseases of Animals to Mankind will be read by Prof. F. Hobday.

CENTENARIAN LIFE GOVERNOR.—Mrs. Raby, of Bath, who recently sent a donation to Charing Cross Hospital on her 106th birthday, has, in recognition, been appointed a life governor of the hospital.

EAST LONDON CHILDREN'S HOSPITAL.—Recently Sir Joseph Burn, the general manager and actuary of the Prudential Assurance Company, opened the new pathological laboratory which has been equipped at the expense of the company. The "Prudential" is also endowing six beds. The new electrical department for ultra-violet and X ray treatment was opened at the same time.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—The following post-graduate lectures will be given during January and February, at 5 P.M., at the hospital, Marylebone-road, N.W. Jan. 14th, Mr. A. W. Bourne: Maternal Mortality; 21st, Mr. J. B. Banister: Late Manifestations of Puerperal Sepsis; 28th, Mr. T. B. Davies: Ante-partum Hæmorrhage; Feb. 4th, Mr. L. C. Rivett: Infant Feeding; 11th, Mr. L. G. Phillips: Management of Contracted Pelvis; 18th, Mr. C. S. Lane-Roberts: Ectopic Pregnancy; 28th, Mr. L. H. W. Williams: Acute Abdominal Pain in Pregnancy.

PROVISION FOR INFECTIOUS DISEASE IN SHROPSHIRE.—The Salop County Council is considering a suggestion by Dr. James Wheatley, the county medical officer, that the best method of making provision for infectious diseases would be the erection of a central hospital. At present there is no provision of this kind in districts with a total population of 146,000. Dr. Wheatley recommends the erection of a hospital, to be provided and managed by the county council, on a site near Hadley belonging to the East Shropshire Joint Hospital Board, where there is already good sewerage and water-supply.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures will be delivered in the Lecture Theatre of the Institute, 37, Russell-square, London, W.C., by Prof. J. C. G. Ledingham, F.R.S., on Current Problems in Bacteriology and Immunology, and their Bearing on Public Health Effort, as follows: Lect. I.: Some Problems of Natural Immunity and Prophylaxis, Dec. 9th; Lect. II.: The Carrier Problem in Relation to Enteric Fever and Diphtheria, Dec. 10th; Lect. III.: Studies on Variola, Vaccinia, and Avian Molluscum, Dec. 11th, at 5 P.M. on each day. No tickets of admission are required.

AN X RAY VICTIM.—Mr. Reginald G. Blackall, one of the early X ray workers at the London Hospital, who has suffered from X ray dermatitis for many years, died on Nov. 29th at the age of 44 years. He joined the staff of the London Hospital in 1902, at a time when the dangers of X rays to the operator were little realised, and has shared the fate of his colleague Mr. E. Wilson, who died, and Mr. E. Harnack, who lost both arms. Mr. Blackall had both his hands amputated in consequence of carcinoma. He continued to work after he knew of the danger, but was compelled to retire in 1920. Three years later the Carnegie Hero Fund Trustees awarded him an honorary certificate and a grant of £75 a year. Soon after, at a quarterly court of the London Hospital, Lord Knutsford presented him with the framed testimonial of the Hero Fund, and announced an award by the hospital of a pension of £285 a year and of a substantial life insurance for his wife and family.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The meeting of this society at the Medical Institute, Newcastle-on-Tyne, will be held on Friday, Dec. 11th, and not on the date previously announced. The President, Dr. G. F. Buchan, will be in the chair, and there will be a discussion on Industrial Hygiene from the point of view of: (*a*) Public Health Administration, by Prof. Harold Kerr, M.O.H., Newcastle-on-Tyne; (*b*) The Physician, by Sir Thomas Oliver; (*c*) The Works Director, by Mr. Angus Watson, chairman of Messrs. Angus Watson and Co., Ltd.; (*d*) The Welfare Supervisor, by Mr. B. L. Lelliott, welfare supervisor, Messrs. Sir Jas. Laing and Sons, Ltd., Sunderland. The dinner of the Northern branch will be held at the close of the meeting, and members of other branches are invited to notify Prof. H. Kerr, Town Hall, Newcastle-on-Tyne, if they are able to attend. As branches have often expressed the wish that meetings of the whole society should be held from time to time in the provinces, it is hoped that there will be a large attendance, especially of members from the North of England and Scotland, at the Newcastle meeting.

REOPENING OF GOLDEN-SQUARE HOSPITAL.—Mr. Lionel de Rothschild last week reopened the in-patient department at the Hospital for Diseases of the Throat, Golden-square, which has been closed for two years during rebuilding and extension. The opening ceremony of the extension now reopened was performed by the Dowager Lady Rothschild in 1899. The cost of building and equipment has been £35,000, £4750 of which has been contributed by the King's Fund, in addition to £10,000 when amalgamation with the London Throat Hospital took place. The wards will now accommodate 75 patients, and there are two operating theatres. The late Queen Alexandra sent £50 to the building fund unsolicited.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND. The annual report of the Royal Medical Benevolent Fund Society of Ireland for the year ending April 30th, 1925, published a few days ago, shows an income from all sources of £2097. In this is included a sum of £422, the amount of income-tax refunded for two years. Of the remainder a sum of £1012 is from dividends and interest. It appears, therefore, omitting small items, that the income directly from subscriptions and donations is some £661. It must be admitted that this is a small sum for the practitioners of the whole of Ireland to contribute. There are some 3000 or more registered medical men practising in Ireland, and an average of 10s. each would not be an extravagant estimate of what they might be expected to contribute. In spite of its limited income the Committee appears to have done a great deal of charitable work during the year. Over 80 applications for assistance were granted and only five refused. Among those who were relieved were five medical men, most of the remainder being widows of medical men.

LIVERPOOL'S OPEN-AIR SCHOOL.—A contract for the erection at a cost of £11,690 of an open-air school, the first in Liverpool, has been sanctioned by the Liverpool Education Committee. The school will accommodate 1200 children and will be situated in Walton Hall Avenue. It will include three assembly rooms and domestic science rooms. There will be 12 square feet of floor space for each child over 12 years of age, which meant a considerable increase of cost. The cost worked out at £34 per child, or at least £10 per child higher than in other parts of the country. The school was strongly recommended by the medical profession and is an experiment in open-air teaching.

DAVID LEWIS EPILEPTIC COLONY, MANCHESTER.—At the annual meeting held at Manchester on Nov. 24th Dr. Alan McDougall, the director, emphasised the contrast between the indirect method of cure practised at the colony and the danger of the direct method practised at home. Dr. McDougall said, "Our experience confirms the faith always held at the colonies, but apparently unrecognised still, after 50 years, outside them, that you get better results and at the very least as high a proportion of 'cures,' if, instead of waging a violent war on fits with inadequate weapons, you act as though the fits were only a thing of secondary importance, and make your chief aim the moral and physical welfare of the patient. The direct method of treating epilepsy has been a steadfast failure for 2000 years. It insists on the patient being an invalid, and it produces, unless it is very quickly successful, appalling results. The broader visioning plan adopted at the colonies recognises that human beings who are prevented from being useful to the world degenerate morally; it recognises that the nature of the epileptic patient is ordinary human nature, and it gives him in addition to medicine an outlet for his human activities. A great obstacle to its use is found in the patient's friends." He pointed out that nearly 2000 patients had been admitted to the colony and most of these had benefited in health and happiness. A number had become free from fits and had returned to the ordinary world—a gratifying result, as nearly all the patients had been under treatment several years before admission to the colony. The daily average of colonists during the past year was 368, the highest on record. A new house for 32 children is being erected at a cost of £13,000.

LANCASHIRE AND SPAHLINGER TREATMENT OF TUBERCULOSIS.—On Nov. 27th about 250 representatives of insurance committees, health authorities, approved societies, along with the medical officers of health, tuberculosis officers, drawn from nearly every town and district in Lancashire, attended a meeting at Preston, called by the Lancashire Insurance Committee to hear addresses by medical men who have investigated this treatment. The chairman of the Lancashire Insurance Committee, Mr. J. W. Rawstron, presided. He said no resolution would be submitted, but the individual delegates would be left to convey the impressions they gathered to the bodies they represented, and he sincerely trusted some good would result. In a letter expressing his regret at his inability to be present Sir Alfred Mond wrote that he was heartily in support of the campaign to raise funds to purchase the Spahlinger Institute. Dr. Thomas Watts, M.P. (Withington), said that he and his colleagues who went to Geneva traced a definite 80 per cent. absolute recoveries, which was very different from 11 per 1000 in this country, and the cost would be something like one-fiftieth of our sanatorium treatment. A remarkable fact was that the results were being obtained by partial sera. Dr. Vernon Davies, M.P., said that after investigation the medical M.P.'s came to the conclusion that the results they had seen could only be described as marvellous, while if the records produced were genuine then the cases could only be described as miraculous. Dr. Leonard Williams said if Spahlinger could not go on and finish his work something of the utmost value would be lost to the world. Dr. Harry Jones, president of the Monmouth division of the British Medical Association, said a meeting of 83 doctors in his division had decided in favour of Spahlinger.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Dec. 8th.

THERAPEUTICS AND PHARMACOLOGY: at 5.30 P.M.
Paper:
Dr. H. Gardiner-Hill: The Feeding of Anterior Lobe Pituitary Extract to Under-Developed Children.

PSYCHIATRY: at 4.30 P.M.
Clinical Meeting at the Bethlem Royal Hospital, S.E.

Thursday, Dec. 10th.

TROPICAL DISEASES AND PARASITOLOGY: at 5.30 P.M.
Papers:
Col. Sir Leonard Rogers: Small-pox and Meteorology in India: Forecasting Epidemics.
Dr. E. A. O. Travers: The Treatment of Leprosy at Kuala Lumpur, Federated Malay States (illustrated with lantern slides and photographs).

EPIDEMIOLOGY AND STATE MEDICINE: Members of this Section are cordially invited to be present.

NEUROLOGY: at 8.30 P.M.
Paper:
Prof. T. Graham Brown: The Physiology of Stepping and its Bearing on the Physiology of the Nerve Centre.

Friday, Dec. 11th.

CLINICAL: at St. Thomas's Hospital, S.E., at 5 P.M.
Demonstration:
Prof. MacLean: The Methods of Determining Renal Efficiency.
Cases:
Cases will be shown illustrating various endocrine disturbances, especially in relation to pituitary diseases.
Dr. Bernard Myers: Case of Splenectomy in a Child for Purpura Hæmorrhagica.

OPHTHALMOLOGY: at 5 P.M.
Clinical Meeting at St. Thomas's Hospital, S.E.

BIOCHEMICAL SOCIETY.
MONDAY, Dec. 7th.—5 P.M. (in the Biochemical Laboratory, Imperial College of Science and Technology, South Kensington). *Communications:*—H. W. Baston and S. B. Schryver: The Isolation of some further Undescribed Products of the Hydrolysis of Proteins. H. Martin and S. B. Schryver: The Action of an Electric Field on Egg Albumin. H. Chick: Sources of Error in the Biological Method of Investigating Fat-Soluble Vitamins. W. V. Thorpe: The Action of Enzymes on the Oxytocic Principle of the Pituitary. R. K. Cannan: Potentiometric Studies in Biological Oxidation Reductions. D. T. Harris: The Action of Light on Blood.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Dec. 7th, to SATURDAY, Dec. 12th. Fellowship of Medicine lecture, Medical Society, 11, Chandos-street, W. Monday, 5.30 P.M., Sir Charles Gordon-Watson: The Prevention and Correction of Deformity in Tuberculous Joints (illustrated by lantern slides).—INFANTS HOSPITAL, Vincent-square, S.W. Special Course, Lectures, and Demonstrations every afternoon. Friday, "Round Table" Consultation. Saturday, Visit to Blind Babies' Home, Chorley Wood.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology. Lectures, Demonstrations, &c., will take place in the Out-Patient Department and Wards.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Lecture-demonstrations, illustrated by cases daily at 5 P.M.—HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W. 4.30–6 P.M., General Practitioners Course dealing with Medicine, Surgery, and the Specialties.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course. Tuesday and Friday, 5.30 P.M., V.D. Clinic. All information as to fees, &c., from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY, Dec. 10th.—3 P.M., Dr. A. J. Whiting: Physical Diagnosis as illustrated by Cases in the Medical Wards. 4.30 P.M., Mr. N. Fleming: Iritis and Glaucoma.

Daily: In-patient and Out-patient Clinics in General and Special Departments, Operations, &c.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 8th.—5 P.M., Dr. W. Griffith: Eczema.
THURSDAY.—5 P.M. (lecture concluded).

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.

THURSDAY, Dec. 10th.—5 P.M., Mr. L. Phillips: The Failed Forceps Case.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 11th.—4 P.M., Mr. Harold Kisch: Cancer of the Larynx.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 9th.—4 P.M., Mr. Percy Hall: The Rôle of Light in the Prevention and Arrest of Disease.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 8th.—4.15 P.M., Mr. J. P. Buckley: The Significance of the Pathological Mesenteric Glands.
FRIDAY.—4.15 P.M., Sir William Milligan: Modern Technique in the Diagnosis and Treatment of Foreign Bodies Impacted in the Food Passages.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Dec. 8th.—4 P.M., Principal Sir James Irvine: An address. Prof. Herring to open a discussion.

CHADWICK PUBLIC LECTURES.

WEDNESDAY, Dec. 9th.—5.15 P.M. (in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.), Dr. A. S. MacNalty: Encephalitis Lethargica (Sleepy Sickness) in England.

Appointments.

BLAIR, D., M.D. Glasg., has been appointed Superintendent of Prestwich County Mental Hospital by the Lancashire Asylums Board.

MCFADZEAN, J., M.B., Ch.B. Glasg., Assistant Medical Officer, Colney Hatch Asylum.

ODGERS, P. N. B., B.M., M.Ch. Oxf., Demonstrator in the Department of Anatomy, University of Oxford.

WILLIAMS, J. W., M.R.C.S., L.R.C.P. Lond., Medical Officer of the Penarth District of the Cardiff Union.

Medical Referees under the Workmen's Compensation Act (Additional): MILLER, H., M.B., B.Ch. Glasg., and STOCKMAN, R., M.D. Edin., for the Sheriffdom of Lanark.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary, Treatment Centre.—Jun. M.O. £500.
Accrington, Victoria Hospital.—H.S. £150.
All Saints' Hospital, 49/57, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £200.
Birmingham Corporation Infectious Diseases Hospitals.—Sen. Asst. M.O. £500.
Birmingham, Queen's Hospital.—Anæsthetist. Obst. and Ophth. H.S. Also Cas. H.S. All at £70 to £100.
Bombay, Gokuldas Tejpal Hospital.—Hon. P. and two Hon. S.'s.
Bradford Royal Eye and Ear Hospital.—Res. H.S. £120.
Bristol, Southmead Hospital.—Second Asst. M.O. £200.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Chester Royal Infirmary.—H.S. and Asst. H.S. £175 and £125 respectively.
City of London Hospital for Dis. of Heart, &c., Victoria Park, E.—P. to Out-patients.
Colchester, Essex County Hospital.—Asst. H.S. and Reg. £150.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.
Dumfries and Galloway Royal Infirmary.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £100 respectively.
Essex County Council and U.D.C.'s of Grays Thurrock and Tilbury.—M.O.H. for U.D. of Grays Thurrock. £200. M.O.H. for U.D. of Tilbury. £200. And Asst. County M.O. for U.D. of Grays Thurrock, &c. £400.
Fulham Parish.—M.O. of South District. About £250.
Great Yarmouth General Hospital.—H.S. £150.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. and Cas. Surg. O. Each at rate of £100.
Kensington, Fulham, and Chelsea General Hospital, Richmond-road, Earl's Court, S.W.—Jun. Res. M.O. At rate of £75.
London Hospital, E.—Asst. Obstet. and Gynæcological S.
Metropolitan Asylums Board, Mental Hospitals Service.—Jun. Asst. M.O. £500. Also Second Assist M.O. £560.
North Middlesex Hospital, Edmonton, N.—S. in charge of Ear Dept. Three guineas per session.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.P. Two H.S.'s. Obstet. H.S. H.P. And Cas. O.
Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Med. and Gynæcological Reg. £100.
St. Andrew's Hospital, Dollis Hill, N.W.—Hon. Asst. P. an Hon. Asst. Gynæcologist.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Clin. Asst.
Salisbury General Infirmary.—Hon. Ophth. S.
Scarborough Hospital and Dispensary.—Two H.S.'s. Each £126.
Sheffield Royal Infirmary.—Ophth. H.S. £80.
Sheffield Union Hospital.—Res. Asst. M.O.'s. £250.
Stepney Union, St. Peter's Hospital, Vallance-road, Whitechapel, E.—Med. Supt. £900. Also First Asst. M.O. £600. And Second Asst. M.O. £450.
Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.
Tipton Urban District Council.—M.O.H. and Sch. M.O. £800.
Wigan Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacant appointments for Certifying Factory Surgeons at Kirkwall, Orkney, Stanmore (Middlesex), and Whitehaven (Cumberland).

Births, Marriages, and Deaths.

MARRIAGES.

JOYNT—WARNOCK.—On Oct. 12th, at All Saints' Church, Srinagar, Kashmir, Major Herbert Fletcher Joynt, R.A.M.C., to Florence May, daughter of Mrs. Warnock and late Mr. Warnock, of Wallasey.

O'BYRNE—VIGORS.—On Nov. 25th, at St. Mary's Church, Hyson Green, Nottingham, Dr. Michael Dermod O'Byrne, to Kate Mary Vigors, widow of Captain C. H. Vigors, M.C., Croix de Guerre.

DEATHS.

BROWN.—On Nov. 23rd, at Winckley-square, Preston, Lancashire, Sir Robert Charles Brown, Kt., M.B., F.R.C.P., F.R.C.S., aged 89 years.

FORMAN.—On Nov. 25th, at "Newmount," Chalfont St. Giles, Buckingham, Elijah Baxter Forman, M.D., J.P., formerly Alderman of the London County Council, aged 86.

KEITH.—On Nov. 24th, at a nursing home, Southsea, after operation, Mrs. Caroline Keith, L.R.C.P. and S. No flowers by request.

LEVENTON.—On Nov. 25th, at Finchley-road, N.W., Julius Leventon, L.D.S. R.C.S.I., aged 50.

MOLSON.—On Nov. 28th, at Goring Hall, Worthing, suddenly, John Elsdale Molson, M.D., Major, R.A.M.C., T.D., late M.P. for the Gainsborough Division of Lincolnshire, aged 62.

PEDLEY.—On Nov. 25th, at India House, Addiscombe, Richard Denison Pedley, F.R.C.S. Edin., L.D.S., of Railway Approach, London Bridge, aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

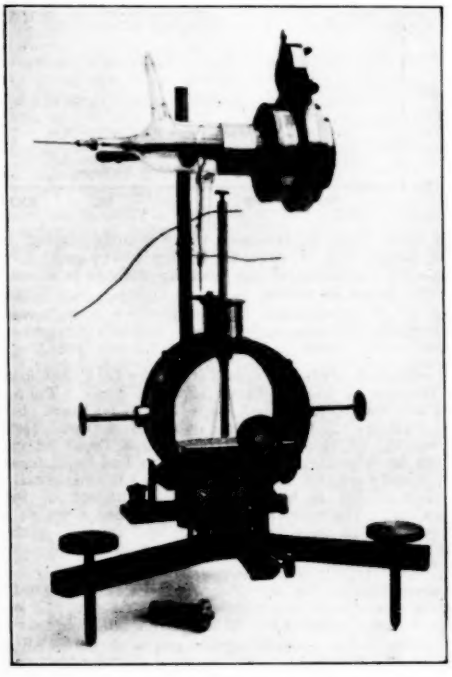
THE PHOTOMETRY OF THERAPEUTIC LAMPS.

AN INSTRUMENT FOR MEASURING ULTRA-VIOLET RADIATION, AND SOME APPLICATIONS OF THERAPEUTIC INTEREST.

BY HARRY D. GRIFFITH, B.A. CAMB.,
ASSISTANT IN NATURAL PHILOSOPHY AND CARNEGIE TEACHING FELLOW IN THE UNIVERSITY OF ABERDEEN;
AND
JOHN S. TAYLOR, M.B., CH. B., D.P.H. ABERD.,
ASSISTANT MEDICAL OFFICER OF HEALTH, CITY OF ABERDEEN.

THE instrument and methods herein described have been developed in order to provide a straightforward means of comparing the intensity of the ultra-violet radiation of lamps used for purposes of artificial sunlight treatment. Somewhat similar instruments have been devised by other investigators [1] [2] for meteorological purposes, but the technique given below is believed to be especially suitable for measuring the radiation of therapeutic lamps.

FIG. 1.

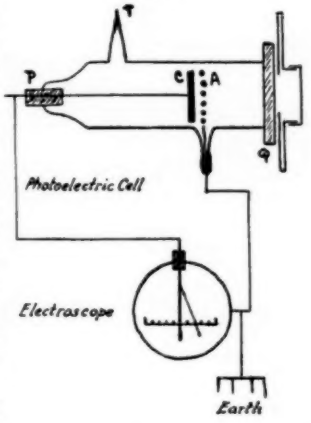


General View of Instrument for measuring Ultra-violet Radiation.

The essential principle of the method is the photo-electric effect discovered by Hertz and Hallwachs, on which a great body of physical research has subsequently been done. The results which emerge are that a metal plate, when illuminated by radiation of wave-length less than a certain critical value, emits electrons, so that if the metal be given a negative charge before illumination this charge is gradually lost during illumination. The "threshold" wave-length depends on the particular metal concerned. The loss of charge can be detected conveniently by means of a gold-leaf electroscope with its leaf connected to the metal plate. If the electroscope and the plate are charged to a negative pressure of, say, 200 volts, relative to the earth, the leaf will diverge. Then on illumination with light of any wave-length less than the threshold wave-length for the metal of the plate, the divergence gradually decreases till all the charge has leaked away. The rate at which the leaf falls is controlled by the rate at which leakage of electricity takes place from the illuminated plate, and this is dependent on the intensity of illumination. Detection of the small leakage current is also possible by means of a galvanometer, but this method is less convenient.

The results obtained tend to be variable unless the active plate (cathode) is protected from chemical change such as oxidation, and it is desirable therefore to enclose the plate in a vessel either evacuated or filled with some indifferent gas, preferably at reduced pressure. A second earthed electrode acting as an anode is provided to give the ejected electrons a definite route out of the cell.

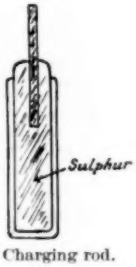
FIG. 2.



In the application of these facts to the work under consideration, advantage is taken of the photo-electric properties of cadmium, which is insensitive to radiation of wave-length greater than 350 $\mu\mu$, and of the fact that quartz absorbs waves shorter than about 200 $\mu\mu$. A photo-electric cell with a cadmium cathode is employed, the cathode being illuminated through a quartz window. In this way a device is obtained actuated only by radiation of wave-length between 350 $\mu\mu$ and 200 $\mu\mu$—that is, by the region of the spectrum comprising those radiations which are of greatest biological interest. (Figs. 1 and 2.)

The electrodes of the photo-electric cell are mounted in a gas-tight manner in a glass vessel closed at one end with a flat quartz plate Q, through which the active radiation enters the instrument. The cadmium electrode C takes the form of a thin disc of the metal, 22 mm. in diameter, fixed to a copper support. This forms one of the electrodes, and since it is necessary to have it insulated from the glass of the cell in the most rigorous manner, it passes out through the quartz bush P. The anode A is a wide-mesh grid of fine wire placed 2 or 3 mm. from the cathode, and the incident radiation shines through the meshes of this grid on to the cadmium cathode. The seals are made with vacuum waxes of the usual type. After cleaning and fixing the electrodes the cell is evacuated as far as possible (to 0·001 mm. in this case) and tested for leaks over a period of several days. It is then filled with hydrogen or argon to a pressure of about 3 mm. mercury and sealed off at T.

FIG. 3.



The auxiliary gold-leaf electroscope is one of ordinary type in which the position of the leaf can be read off against a scale. The one used in these experiments has leaves 5 cm. long by 2 mm. wide, and gives a deflection of 12 mm. when the pressure between the leaf and the case is 220 volts. Very rigorous insulation of the support of the leaf is again necessary. Sulphur quartz or amber is required. The "natural leak" of the electroscope and cell together is less than 1 scale division per hour. A diaphragm of adjustable size is mounted in front of the cell and can be set so that the opening is of diameter 16, 8, or 4 mm., allowing the sensitivity to be controlled. It also carries a cap to cover the opening of the diaphragm when the cell is not in use.

The instrument can be charged by touching the rod of the electroscope with the negative wire of the 220-volt direct current-supply, a safety resistance of 50,000 ohms being included to prevent risk of short circuits. Another method is by the charging rod shown in Fig. 3. This consists of a short piece of brass rod with a glass handle, insulation being obtained by means of a sulphur plug. Friction of the rod on the hair of the head electrifies it negatively, leakage of the charge being prevented by the sulphur. On touching the stem of the electroscope with the charged rod the leaves diverge with the necessary negative charge. This is a very convenient and reliable process if the sulphur be kept clean and not handled.

[1] Elsterand Geitel, Physikolische Zeitschrift, 1914, xv., 1; 1915, xvi., 405.
[2] Dorno: Ibid., 1917, xviii., 381.

Experimental Procedure.

When in use the instrument is set up facing the lamp to be studied, and the diaphragm closed to its smallest aperture. A spot of light coming through the diaphragm will appear on the cadmium plate and the cell can be lined up till this is central. With the cap in position and the diaphragm opened to one of the standard sizes, the negative charge is given to the cell. On removing the cap the gold leaf will be seen to fall steadily if active radiation is present. Two suitable points on the scale are chosen within the travel of the gold leaf (in the instrument in use here, division 11 and division 7). A stop-watch is started by the observer when the leaf crosses division 11, and is stopped when it crosses division 7. This is equivalent to measuring the time which the active light takes to cause the leakage of a definite quantity of electricity from the cadmium plate. Several readings are taken as in the examples given later, and the average of these is used for computation.

Results Obtained with Instrument.

At the outset it may be said that when the research was started it was suspected that photo-electric cells of this description would probably deteriorate quickly with use, through "fatigue," contamination of vacuum, and other causes. These doubts have been found to be groundless. It seems that in the measurement of powerful ultra-violet sources to the accuracy aimed at (an error not in excess of 5 per cent.) these bogies of ordinary photo-electric photometry cause no trouble.

Inverse Square Law.

Other things being equal, the cell should give a leak proportional to the total energy of radiation between 350 $\mu\mu$ and 200 $\mu\mu$ entering it—that is to say, using a constant source and keeping the diaphragm to one size, the time of discharge through the standard range should be proportional to the square of the distance from the source. Measurements were made which verified the fact that this relation holds good for cells of the type described, so long as the time of discharge is greater than a certain small value.

Arbitrary Unit of Ultra-violet Intensity.

For the comparison of similar lamps, an arbitrary unit is used which depends on the dimensions of the particular cell used. The unit chosen was a lamp which, when placed 30 in. from the cell, causes the standard leak (division 11 to division 7 on the scale) to take place in nine seconds, the full aperture being used (22 mm.). When a lamp studied, D inches from the cell, discharges the standard amount of electricity in T seconds, the diaphragm opening being A, its power will be given by—

$$P = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2$$

Thus, for the measurement of the power of a lamp, three quantities have to be known—the distance from lamp to cell, the size of aperture used, and a fair average value of the time of discharge.

Constancy of Cell.

The power, calculated by this formula, of a certain quartz-mercury arc as measured on different dates extending over a month was found to be satisfactorily constant: Sept. 27th, 18 units; Oct. 11th, 21 units; Oct. 18th, 23 units; Oct. 20th, 22 units; Oct. 22nd, 22 units. The simplicity of this technique compared with that involved in performing similar measurements with a spectrometer and bolometer or thermopile, or by a photographic method involving measurement of the density of a silver image, is apparent, though admittedly a more rigorous method of radiometry is necessary for the absolute calibration of the cell.

An important advantage of the instrument described here is that it is self-contained, robust, and portable.

Measurements on Carbon Arcs.—Solid Carbons.

The outstanding result which emerges from measurements made on carbon arcs is that the great bulk of ultra-violet radiation given out comes from the flame of the arc and not from the poles. Thus, in working with 75 ampère arcs, which have a tendency to flare, whenever a flare occurred an observer at the instrument some 40 ft. away saw the gold leaf *jump* downwards, sometimes a big flare making it drop as much as half a scale division.

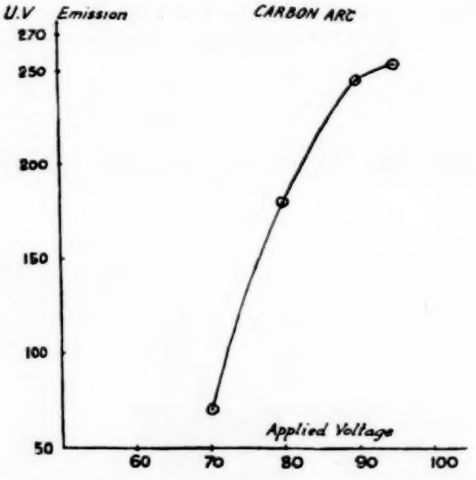
The emission with the carbon arc is, of course, not nearly so constant as that of the mercury arc. The crater tends to move round and round the carbons more or less rhythmically, with the result that the readings of the instrument go through corresponding cycles of maxima and minima. In the estimates of power given below regular readings during at least one complete cycle were obtained, so that the results given are considered to be fair average values of the effective power during an actual irradiation of patients. They were taken at the level of the arc at distances varying according to local conditions of some 20 to 40 ft. away.

The instrument is being adapted to make the averaging for fluctuations of intensity automatic by adding a condenser to it; the standard leak will then take 20 minutes or so to occur instead of 30 seconds, and the result obtained will represent the average power of the arc during the 20 minutes. It has to be noted that the fall of the leaf through the standard range means that a definite amount of ultra-violet energy has been delivered by the arc. It is anticipated that in this form the instrument will give a useful means of controlling dosage.

Variation of Ultra-violet Emission with Voltage.

The power of the 75 ampère arcs, having carbons of diameter 23 mm. and 30 mm., at the City Hospital, Aberdeen, has been measured, and its variations with varying input

FIG. 4.



voltage have been determined. The results quoted below (see also Graph, Fig. 4) show that there is very great decrease of ultra-violet emission if the running voltage is allowed to drop some 10 or 15 volts.

Voltage.	Power.	Voltage.	Power.
70	70 units.	90	245 units.
80	180 ,,	95	253 ,,

This variation probably arises from the fact that a stable arc is shorter at low voltages than at high. There will thus be less flame, and what there is will be more shielded by the carbons if the applied voltage drops. Relative measurements of the emission of various types of carbon arcs have been made, and the emission has been found to depend largely on the construction and running conditions, a question which is being made the subject of further investigation. The results given below afford a rough guide to the power that may be expected, and refer in each case to arcs taking solid carbons. The effect of impregnation is to be studied later.

15 amp. type	Power,	12 units.
25 ,, ,, ...	,,	60 ,,
75 ,, ,, ...	,,	156 ,,

These results are in general agreement with those obtained by Lindemann [1] working with smaller arcs under carefully controlled laboratory conditions.

A set of typical readings are given below.

75 Ampère Carbon Arc.

Distance from arc to cell	420 in.
Diameter of diaphragm	15 mm.
Running voltage	77 volts.
Time of discharge (secs.)	Div. 11 to div. 7.
15·0 Effect of a flare	
38·0 Arc feeding itself	
21·8	
22·0	
21·2	
25·0	Average time, 24·5 secs.
22·6	
18·2 Effect of a flare	
27·4	
29·2	
28·8	

$$\text{Power of arc} = \frac{1}{100} \times \frac{D^2}{T} \times \left(\frac{22}{A}\right)^2 = \frac{1}{100} \times \frac{420^2}{24{\cdot}5} \times \left(\frac{22}{15}\right)^2 = 156 \text{ units.}$$

[1] Lindemann: Annalen der Physik, 1906, xix., 807.

The relative steadiness of the mercury arc is shown by the following readings :—

3 Ampère Mercury Arc, Type A.

Distance from arc to cell .. .. 89 in.
Diameter of diaphragm .. .. 8 mm.
Time of discharge (secs.) :—

26·2	26·2	Average time, 26·5 secs.
25·8	26·6	
26·2	26·6	
26·6	26·6	
26·8	26·2	
27·0	26·4	

Hence power of lamp, 22 units.

Measurements on Mercury Arcs.

Two types of mercury arcs have been investigated, an "atmospheric" type with tube length 5 cm., diameter 14 mm., taking 2·2 amps. at 100 volts across the tube; it has a hemispherical white enamel bowl above it. This will be referred to as lamp A.

Lamp B is a vacuum type lamp, tube length 8 cm., diameter 15 mm., taking 2·8 amps. at 156 volts across the tube. It has a hemispherical polished metal bowl behind it.

Measurements have been made of the powers of both lamps. A typical series of measurements for lamp A has been given above. The small variations are assigned to slight alteration of arc length or supply voltage. They are even less in the case of lamp B.

Power of mercury lamp A .. .. 20·9 units.
„ „ B .. .. 57 „

These measurements were made with the cell on a horizontal line from the lamp perpendicular to the tube length, the bowls being tilted to expose the quartz tubes completely. Thus the ultra-violet emission of B was about three times that of A.

Measurements have also been made of the distribution of ultra-violet energy round lamp A.

Along horizontal line perpendicular to tube length	20·9 units.
Along horizontal line at 45, perpendicular to tube length	14·7 „
Along line sloping downwards at 45, perpendicular to tube length	19·8 „
Vertically under lamp	32 „

Measurements are in progress of the effect of the bowl-shaped reflector in focusing the ultra-violet energy, and of the effect of voltage variation on the ultra-violet output.

General Considerations.

Another fact which requires consideration is that the instrument gives a directly valid comparison of the powers of sources of a similar nature—e.g., of two different sizes of carbon arcs, or of two types of mercury arcs. In comparing a carbon arc with a mercury arc, however, one other factor has to be taken into account, since the mercury arc is relatively richer in short waves than the carbon arc, in the region to which the instrument is sensitive. This is the usual difficulty of heterochromatic photometry, exactly analogous to the difficulty of comparing a lamp of bluish tint with a yellowish one; to settle this point it is necessary to know how the sensitivity of the measuring instrument varies with the wave length. Preliminary tests have shown that the sensitivity of the instrument to different wave lengths in the band of the spectrum to which it responds (350 $\mu\mu$ to 200 $\mu\mu$) is not far from uniformity. This detail is being investigated at present, but meanwhile it is not considered to be of great practical importance, at any rate until the problem has been solved as to what are the relative biological effects of the same amounts of ultra-violet energy applied in the form of mercury arc radiation, and of carbon arc radiation respectively.

It is interesting to note that a sheet of window glass held in front of the diaphragm stops all leak as completely as does the cardboard cap of the instrument, thus showing conclusively that only waves shorter than about 350 $\mu\mu$ actuate the instrument.

A further form of the apparatus is in use, in which the photo-electric leak across the cell is balanced by adjusting a resistance which allows current to flow in, so as just to neutralise the leak. The variable resistance, which must be of the order of 10 million megohms, takes the form of a thermionic valve with a very small quartz-insulated anode. In using this type, all that is required is simply to set the resistance till the gold leaf is stationary. Then the intensity of ultra-violet illumination is read off directly from the setting of the instrument, instead of indirectly from observation of the fall of the leaf, as in the first type described.

The work described above has been done by collaboration between the Natural Philosophy Department of the University of Aberdeen and the Health Department of the City of Aberdeen. The authors desire to express their indebtedness to Prof. Thomson for giving the use of the facilities of his research department, and for advice and criticism during the course of the work.

COLONIAL HEALTH REPORTS.

UNFEDERATED MALAY STATES.

Johore.—Mr. H. Marriott, General Adviser, in his report on this State for 1924 states that on an estimated population of 317,317 the birth-rate was 38·75 per mille and the death-rate 26·07 per mille. The infantile mortality for the year was 182·90 per mille, compared with 196·28 in 1923. The territory was again entirely free from cholera. There were 3 cases of plague and 2 of cerebro-spinal meningitis, all fatal; 29 cases of chicken-pox and 205 of measles (including German measles) were reported; there was 1 death from measles. Of small-pox there were 8 cases, all of which recovered; and of influenzal pneumonia 6 cases, with 4 deaths; 58 cases of enteric fever were recorded, with 16 deaths. There were 1798 cases of ankylostomiasis, with 68 deaths; 677 cases of beri-beri, with 63 deaths; 3 cases of blackwater fever (1 death), and 1810 of dysentery and diarrhœa (215 deaths). 12,514 cases of malarial fever were treated in Government and estate hospitals, and the percentage of deaths to total treated was 2·85, against 3·28 in 1923. 446 deaths were registered as being due to phthisis. The number of patients in the mental hospital at the end of the year was 176. Lepers in the Johore Leper Asylum numbered 70. All female lepers are transferred to the leper camp at Singapore. Admissions to the Government hospitals during the year were 15,987, and the number of attendances on out-patients at the various stations was 62,421. Johore Bahru showed the highest rainfall for Government stations, 126·72 inches, and the lowest was 76·74 at Batu Pahat. Temperature variations were not so great as during the previous year, there being a difference of 24 degrees between the highest maximum, 91 (Tangkuk), and lowest minimum, 67 (Kukub). Dr. R. D. Fitzgerald was confirmed as principal medical officer.

Kelantan.—The report for 1924 is signed by Mr. H. C. Eckhardt, Acting British Adviser. The total population at the 1921 census was 309,300, of whom 286,363 were Malays, mostly born in Kelantan. Of 12,000 Chinese, half were born in Kelantan, as were practically all of the 6000 odd Siamese. There were 34 admissions to the European hospital, and 2 deaths. In the native hospital at Kota Bharu there were 88 patients on Jan. 1st, 1924; 2059 patients were admitted during the year, and there were 35 deaths. The main ailments treated were malaria (274 cases), syphilis (163), yaws (346), ulcers (181), ankylostomiasis (123), beri-beri (4), and phthisis (69). In the cases of yaws very satisfactory results were obtained by the use of novarsenobenzol. The isolation camp at Kota Bharu was used for the isolation and treatment of phthisis and chronic bowel complaints; there were 94 admissions and 36 deaths. There were 6 lepers in the leper camp at Kota Bharu at the beginning of 1924; 7 were admitted during the year, and 3 absconded. Treatment with sodium hydnocarpate and Heiser's Philippine formula, and the internal administration of cod-liver oil were actively carried out. As a result 2 cases were discharged with no outward signs of the disease and no microscopical findings of *Bacillus lepræ*. The new hospital at Kuala Krai was completed with accommodation for 50 patients. The number of out-patients treated at Kota Bharu was 24,153, at Kuala Krai 9384, at Tumpat 8928, at Pasir Futeh 6465, and at the Federated Malay States railways hospitals 9663. Travelling dispensers visited market-places and various kampongs at regular intervals, and treated 7057 children. A special hookworm campaign was carried out in Ulu Kelantan. It was well organised and most successful; 7030 cases were treated with carbon tetrachloride. Twenty-three sporadic cases of choleraic diarrhœa, with 12 deaths, were reported from various villages. There was 1 fatal case of cholera. The health on estates was good. The routine medical inspection of estates was thoroughly carried out by Dr. W. J. Geale, medical officer at Ulu Kelantan. Dr. J. R. McVail was in charge of the medical department during the whole of the year, and Dr. Lim Shin Thwin assisted when necessary in Kota Bharu.

COLLOIDAL GOLD IN THE TREATMENT OF ALCOHOLISM.

To the Editor of THE LANCET.

SIR,—I note with interest in your issue of Nov. 28th that Dr. Bousfield confirms the value of colloidal gold in the treatment of alcoholism. I have used colloidal gold for six years (THE LANCET, 1922, i., 691, and 1924, ii., 491) and the longer I use it the more certain I am of its value. Dr. Bousfield uses atropine, a drug which I seldom found of use; generally, in fact, the reverse, and I stopped using it several years ago. Why colloidal gold should be of such value in these cases one does not at the present know.

I am, Sir, yours faithfully,

STANFORD PARK,
Resident Medical Superintendent, Bay Mount,
Nov. 28th, 1925. Paignton, S. Devon.

THE SHIPPING EXHIBITION AT OLYMPIA.

THE Shipping, Engineering and Machinery Exhibition held during the past fortnight at Olympia illustrated in a hundred ways the improvements being made on the material side of the business, but few devices to help the personnel were in evidence. One might look in vain for models of improved forecastles, or for examples of baths, lavatories, or water-closets, and there were surprisingly few ventilation exhibits. It appears that it pays a man to instal an expensive centrifugal extractor to recover oil from oily rags, but that to make it easier for the man who makes the rags oily to get the oil off himself is not a business proposition. In the long run, that is a mistaken view. One promising ventilating system is shown, the "Kelvite," with a quiet fan in each cabin regulated by a four-way switch: on, cold air; on, low heat; on, full heat; off. The indriven air is warmed as and if required, and the heating coils only function when the fan is running. It is claimed that air trunking is not needed, only a single shoot to the deck, and if that is found true in practice, ventilation of ships will become easier. The same firm (Kelvin, Bottomley, and Baird) exhibited an ingenious piece of apparatus, the size of a large thermos, for estimating the carbonic acid in furnace gases, giving the required figure (in percentage or parts per 10,000) in two minutes by a direct reading. The cost (£17) may put it out of reach of enthusiastic surgeons on ships. There was one beautiful instrument which, it is hoped, may abolish sea-sickness. This gyroscope, manufactured by the Sperry Company, has already performed feats almost as miraculous as that of keeping the ship on an even keel, and we wish it all success.

RADIANT HEAT IN OCULAR INFLAMMATION.

Dr. A. P. Schultz, of Brooklyn, sends us a reprint from *Solidarity* describing the relief afforded by intense dry radiant heat in his own case when he was suffering from iritis-keratitis. Before he tried this physical remedy he had obtained some mitigation of his pain from atophan in daily doses of 45 gr. combined with local treatment by dionin and thiosinamin; but from the moment of its application radiant heat relieved pain and later, he is sure, helped to clear up corneal infiltration. There is, we might add, nothing very new in this use of dry radiant heat; the late Mr. R. W. Doyne wrote a paper describing the treatment in the Transactions of the Ophthalmological Society for 1900. But Dr. Schultz's testimony is striking confirmation.

THE GREAT PLAGUE IN LONDON.

IN the *Journal of the London Society* for November is an account of the Great Plague of London in 1665, by Mr. W. G. Bell, F.S.A. The map accompanying the paper shows how the mortality varied from district to district, but was less in the walled city, concentrating on the poorer inhabitants of the jerry-built slums outside the walls, Aldgate, Bishopsgate, and Moorgate. Mortality was also high about Westminster Abbey. The outbreak began in the ward of St. Giles-in-the-Fields (about the spot where New Oxford-street and Charing Cross-road now join). It was intense in the west in July, gradually spread east, and reached its peak there in September. Burial was a difficulty, some churchyards became so overcrowded as to raise their level two or three feet above that of the neighbouring streets—as may still be seen—and plague pits were opened, the nearest in Aldgate. Infection was supposed to spread through the air or from the soil, hence people stuffed the keyholes of their doors to exclude the outer air, and they killed cats and dogs which might have helped to keep infection at a distance. The Great Fire in the next year burned out the walled city, but did good to the slums outside, by making way for better buildings and better sanitation in the areas which it cleared.

DRUG SMUGGLING.

IMPORTANT seizures of illicit drugs in the Straits Settlements, totalling nearly 300 lb. of morphine hydrochloride, have been reported to the League of Nations by the British Government. The drugs were shipped from Antwerp to the Far East, but were intercepted at Singapore. The following is a typical story:—

On the arrival of the ss. *Haruna Maru* from Europe on May 25th, a party of revenue officers went on board and examined a consignment of seven casks which were declared to contain carbolic acid. Six of the casks were standing on end with the marks downwards, but the seventh, which was right end up, was opened first and found to contain 63 lb. of morphine hydrochloride. The other six casks contained carbolic acid as declared. The casks were similar to beer casks and held about 50 gallons each. On examination it was found that inside each cask was a smaller rough wooden cask containing a large tin packed in sawdust. In the case of the six genuine casks, these tins, which were cylindrical, had circular soldered lids at the side of the upper plane surface, as in kerosene oil tins, and were filled with solidified carbolic acid. In the case of the seventh cask, the tin was larger and the "lid" was not soldered down but could be prized open. When this lid was removed it appeared that this tin also was filled with carbolic acid. Further examination, however, showed that the acid was confined in a small compartment about 7 in. in diameter, soldered to the upper surface round the "lid." The outer tin was then cut open and found to contain a smaller tin packed around with sawdust and about 150 lb. of sheet lead, evidently put in to make up weight, and its contents were 63 lb. of pure morphine hydrochloride. The master of the ship was fined $1000 and the seven casks confiscated.

The Secretary-General of the League has sent to the Powers having extra-territorial rights in China a copy of a resolution adopted by the League's Advisory Committee in August last and approved by the Council, to the effect that those Powers "should, if they have not already done so, make regulations, the breach of which shall be punishable by adequate penalties, to control the carrying on by their nationals in China of any trade in the drugs to which Chapter III. of the Opium Convention applies."

DIRECT INJECTION OF ADRENALIN INTO THE HEART FOR ARREST DURING ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In the following case the heart and respirations ceased and revived again after the injection of adrenalin into the heart. The case shows some variation from the two reported in THE LANCET (1924, ii., 746).

The patient was a healthy young woman suffering from sterility, and I was about to dilate the cervix and curette her. The assistant had some difficulty in giving the chloroform, and must have dropped too much on the mask, for while I was waiting to begin I discovered that the patient had stopped breathing. Her pulse could not be felt, and no heart sounds were heard. I immediately started artificial respiration, and gave hypodermics of strychnine, pituitrin, and camphor in oil. There was no reaction, and the cornea looked glazed. I then injected adrenalin through the fourth space into the heart, and heart and lungs responded at once; there must have been at least five minutes interval since they had ceased acting. After waiting a few minutes, during which the patient vomited slightly, I quickly did the operation, and before it was over she began to show some signs of feeling pain. Within half an hour she was round, and able to speak, and she had no trouble of any kind afterwards. When I saw her several hours later in the evening she was very bright and had already taken food.

In the cases previously reported the patients did not recover consciousness for a long time, but my patient came round just in the same manner as any ordinary operation case does.—I am, Sir, yours faithfully,

Quetta. E. G. STUART, M.B. Lond.

PATHOLOGICAL AND BACTERIOLOGICAL LABORATORY ASSISTANTS' ASSOCIATION.

THIS Association was founded in 1912 with the object of improving the status of the laboratory assistant by raising the standard of technical knowledge through the medium of an educational programme culminating in examinations for certificates of proficiency in laboratory technique.

The Association consists of: (*a*) life members; (*b*) honorary members, limited to 20; (*c*) registered members who possess one of the Association's certificates of proficiency; (*d*) ordinary members 21 years of age and over with three years' training in a recognised pathological or bacteriological laboratory; and (*e*) junior members under 21 years or with less than three years' experience. There are at present 102 registered, 158 ordinary, and 97 junior members, who are organised in branches throughout Great Britain. The governing Council of the Association consists of the president, who must be a member of the Pathological Society of Great Britain and Ireland, the vice-president, certain officers and divisional representatives elected by the members.

The ordinary meetings of members are arranged by the branches and are largely educational in character. To encourage the systematic teaching of the junior members, lectures and classes in the technique of pathology and bacteriology are conducted by members of laboratory staffs and by senior members of the Association. General meetings are held from time to time; a congress lasting five days for the discussion of papers and exhibition of methods and specimens was held in Edinburgh in 1924, and another will be held in Cambridge in 1927. An official organ—*The Laboratory Journal*—is issued to members quarterly; in addition to Association news it contains original articles and abstracts of technical interest to laboratory workers. There is an employment bureau and notices of vacancies are sent to members who register. The examinations are held annually in July in London and other convenient centres. The Secretary of the Association is Mr. H. P. Hudson, Panama Villa, Trumpington, Cambs., and the Overseas Corresponding Secretary is Mr. W. J. Muggleton, 82, Chapter-road, London, N.W.2.